香港申訴專員公署

Office of The Ombudsman, Hong Kong



主動調查報告

Direct Investigation Report

食物環境衞生署執行防治鼠患工作成效

Effectiveness of rodent prevention and control by Food and Environmental Hygiene Department

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Executive Summary
Direct Investigation Report

Effectiveness of Rodent Prevention and Control by Food and Environmental Hygiene Department

Introduction

Rodent infestation has been an issue of wide public concern as it causes nuisances to the daily life of the general public and may spread different types of serious diseases.

2. Currently, the Pest Control Steering Committee led by the Food and Health Bureau formulates anti-rodent policies and action plans to be implemented by the Food and Environmental Hygiene Department ("FEHD") and other departments. FEHD handles rodent infestation in ordinary public places, and its duties involve three major aspects, namely rodent surveillance, rodent prevention and disinfestation, and handling of rodent-related complaints. FEHD also provides training and technical support for other government departments regarding rodent prevention and control at public venues and premises under the latter's management.

3. There are views that FEHD's rodent control has been ineffective and that the results of its rodent infestation surveys ("RISs") could not reflect the actual situation of some locations. According to media reports, a number of confirmed rat Hepatitis E cases had been reported since 2018, and there were concerns about the serious rodent infestation in many markets under FEHD's management in 2020.

4. After examining FEHD's work, we have the following comments and recommendations.

Our Findings

RISs

5. Currently, FEHD conducts RISs in a six-month interval within 50 designated survey locations in 19 administrative districts. The RIS in each survey location lasts

for three days where 40 to 60 census baits (a piece of uncooked sweet potato) would be placed in each location based on its area. The rodent infestation rate ("RIR"), which is the percentage of baits gnawed by rodents in the survey locations, is aggregated to assess the extensiveness of rodent infestation in the public places within each survey location. The RIR is categorised into three levels. An RIR below 10% falls into Level 1 where rodent infestation is not extensive during the survey period. Level 2 ranges from 10% to below 20% reflecting slightly extensive rodent infestation during the survey period. An RIR at or above 20% falls into Level 3 where rodent infestation is extensive during the survey period.

6. While the RIR shows the percentage of rodent activity range within each survey location, it cannot reveal the actual number of rodents or the frequency of their appearances. We notice that there are occasional media reports about rodent infestation in various districts. We also received quite a number of public views about the nuisance caused by rodent infestation in various districts and particular venues. Despite a rising trend on the number of rodent-related complaints and the figures of disinfestation from 2016 to 2020, the overall RIR recorded during the same period had been hovering at relatively low levels of below 5%. Although some administrative districts recorded relatively higher RIR, the highest rate among them was only at Level 2. FEHD explained that due to limitations of RIR, it would consider various factors (including rodent-related complaints, observation of frontline staff and views from members of local community) in making a comprehensive assessment on rodent infestation.

7. As seen from the preceding paragraph, there are limitations on the methodology of RISs, resulting in a possibility for RIR not truly reflecting the extent of rodent infestation. While FEHD publishes other rodent-related data (such as the number of rodent-related complaints, rodents caught and dead rodents found) in addition to RIR where necessary, RIR is undoubtedly the most important indicator of rodent infestation among the general public. In order to enhance its credibility, we believe that RIR should be formulated in a way that can reflect the severity of rodent infestation in multiple aspects (including the distribution and number of rodents). Therefore, FEHD should explore whether the methodology of RISs can be modified to reduce the constraints of RIR, and examine further whether it is appropriate to incorporate factors that may help assess the extent of rodent infestation into the calculation of RIR. FEHD may consider engaging local universities and academic institutions to participate in researches to explore the feasibility of formulating a "composite RIR" that incorporates different factors.

8. With RISs being conducted every six months only, it may render the aggregate RIR out-of-date because rodents have high reproduction rates and their breeding grounds are subject to environmental hygiene. We think that FEHD should consider conducting RISs more frequently each year to improve the validity of survey results and exploring appropriate manpower arrangements to cope with the additional workload.

9. When conducting RISs, FEHD would hang census baits with warning notices on supporting objects such as water pipes and pillars and suspend disinfestation of rodents until completion of the survey, so as to prevent interference with RISs. During our site inspections, we noticed that FEHD had failed to attach a warning notice to a census bait and continued to arrange disinfestation of rodents during the survey period. FEHD should consider introducing administrative measures to ensure that its staff conduct the surveys in an appropriate manner. Such measures may include a comprehensive review of the relevant guidelines to ensure their clarity and accuracy, regular briefings and random surprise checks during survey periods.

10. Starting from mid-2020, FEHD has required that additional rodent disinfestation be carried out at survey locations with a "relatively high" RIR of 8% or above, followed by another survey. In August 2021, FEHD revised the Pest Control Technical Circulars ("Technical Circulars") to include the additional rodent disinfestation and survey in the follow-up actions for RIR at Level 1. Such work serves as prompt and proactive rodent control when the RIR is approaching the lower limit of Level 2 (i.e. 10%), thereby preventing rodent infestation from deteriorating into Level 2 or above.

11. We reckon that FEHD's additional disinfestation and survey for an RIR of 8% or above do not correspond with the follow-up actions "to continue with routine rodent disinfestation" specified for an RIR at Level 1. Furthermore, if FEHD considers an RIR of 8% as "relatively high", it should review the need for adjusting the existing three-tier classification of RIR (in particular the suitability of setting Level 1 at below 10%) and the corresponding follow-up actions to ensure effective rodent control on different levels of infestation.

Rodent Prevention and Disinfestation

12. Trapping and poisoning with baits are two major ways adopted by FEHD for rodent control. Based on its knowledge of the rodent species commonly found in Hong Kong and their habits, FEHD makes its professional judgement as to which methods

and tools should be used for rodent disinfestation. This Office has no intention to intervene. Nevertheless, our investigation revealed that some frontline staff of FEHD did not punch the packets of poisonous baits to allow the smell to emit. A contractor staff's allegation that rodents would tear the packing and take the poisonous baits reflects apparent lack of understanding about the correct use of such baits, which directly affected their effectiveness. Since April 2020, FEHD has progressively included in new contracts with pest control contractors the requirement that packets of poisonous baits must be punched before use. Violation of such requirement will be deemed as a serious default. Moreover, FEHD has produced and uploaded to its intranet a series of videos about the skills in rodent disinfestation for its staff and contractors' reference. Despite FEHD's rectification, it is difficult to tell whether such lack of understanding is only the tip of the iceberg. In our view, FEHD should strengthen the training for both frontline and supervisory staff. While frontline staff should be able to correctly use the tools and equipment for rodent disinfestation, supervisory staff should also acquire relevant knowledge for identification and rectification of misuse during routine inspections.

13. On rodent prevention, FEHD mainly relies on education, intensive cleaning and enforcement action especially for two potential hotspots of rodent activities, namely public markets and rear lanes.

14. Starting from 2020, FEHD has stepped up cleaning and disinfection in public markets, in particular the communal areas, public passageways and vacant stalls. As for rented stalls and their neighbouring areas, the stall tenants are responsible for cleaning on their own after business hours. FEHD also engages the Market Management Consultative Committees and makes use of the two monthly market cleaning days to remind the tenants to keep their stalls clean and take enforcement actions. In January 2021, FEHD issued instructions to its district offices, requiring them to seek the assistance of the Market Management Consultative Committees to remind stall tenants to properly dispose of their refuse. FEHD also stepped up its inspections and enforcement actions. Between January and November 2021, FEHD issued 51 verbal warnings to stall tenants for failure to maintain cleanliness inside and outside their stalls.

15. In our opinion, effective rodent control in public markets relies greatly on the stall tenants' effort to keep clean and maintain good hygiene both inside and outside their stalls for elimination of rodents' food sources. Otherwise, rodent control would remain ineffective however hard FEHD steps up cleaning and disinfection of common

areas. Although FEHD indicated that it had stepped up enforcement actions since January 2021, we still found different degrees of hygiene problems during our inspections at individual markets later in the same year, including refuse accumulation outside some market stalls, and refuse, articles and seafood residues around sewage drains outside seafood stalls after business hours. Such refuse and articles were most likely left behind and discarded by the stall tenants who, by doing so, had shifted their responsibilities for cleaning the stalls to FEHD's contractors. As regards FEHD's enforcement actions, they were simply verbal warnings issued to stall tenants who had failed to maintain cleanliness and hygiene. The effectiveness of FEHD's monitoring is, therefore, questionable.

16. We reckon that FEHD should conduct intensive surprise inspections to ensure the effectiveness of its enhanced efforts on cleaning and disinfection. Where irregularities are found, FEHD should strictly enforce the tenancy terms against the stall tenant concerned and even consider invoking other applicable legislation to compel the tenant to clean the stall and neighbouring area every day. Intensive inspections will definitely require additional manpower. Hence, FEHD should actively explore how to empower the management staff of contractors to enhance the effectiveness of enforcement actions and ensure that inspections can serve their purpose. For districts with more public markets and hence insufficient resources, FEHD should adopt a risk-based approach to focus its inspection and enforcement on those markets in poorer hygiene condition. Besides, FEHD should continue its efforts to educate stall tenants on environmental hygiene and step up cleaning of public markets where necessary. FEHD should also consider such possible ways as establishing guidelines to set out objective standards for the cleanliness of stalls to facilitate stall tenants' understanding of its requirements and frontline staffs' inspection and monitoring.

17. FEHD mainly relies on frontline staff's observation and assessment to determine whether there is need for stepping up cleaning and anti-rodent work for particular public markets. However, the assessment criteria and weighting of each criterion may vary among staff from different districts, leading to variations in follow-up actions taken. Given the large number of markets, it may be difficult for FEHD to grasp accurately the conditions of each public market and perform overall monitoring and management without objective standards and guidelines. Hence, FEHD should consider introducing a review mechanism setting out appropriate factors for consideration and standards under a risk-based approach in order to work out systematically a list of markets requiring stepped-up cleanliness and anti-rodent control. FEHD should in parallel review the effectiveness of a targeted intensive cleaning

programme started at Tai Shing Street Market and the intensive anti-rodent operation being piloted in 73 markets. Subject to the results and resources, FEHD should consider extending the schemes to other markets in need.

18. In combating rodent infestation in rear lanes, FEHD has from time to time launched thematic, special operations in recent years and strengthened enforcement action against irregularities found in the interior and exterior of restaurants during opening hours. We have arranged site inspections to three administrative districts, namely Sham Shui Po, Wan Chai and Yuen Long. While acknowledging FEHD's efforts in rodent disinfestation, we still observed serious environmental hygiene problems in some rear lanes including disposal of various articles and refuse, as well as outflow of sewage with offensive smell. We even found restaurant staff allegedly cleaning utensils and preparing food at rear lanes.

19. Rear lanes as public places are understandably more difficult to monitor than public markets under FEHD's management. Nevertheless, we notice that the environmental hygiene problems are likely related to shops adjoining rear lanes. In this regard, we consider that FEHD should first examine whether the existing mechanism for monitoring the cleanliness of shops adjoining rear lanes (especially restaurants) is effective. Where necessary, FEHD should implement enhanced measures including regularising its special operations, arranging more frequent inspections and taking more stringent enforcement actions.

20. Moreover, while FEHD's special operations focus on restaurants in business, there are plenty of food sources inside food shops; be it open or closed, they should maintain cleanliness and hygiene at all times to avoid rodent infestation. As such, we find FEHD's current practice of monitoring the operation of shops and conducting inspections only during business hours inadequate. FEHD should explore ways to handle the after-hours cleanliness problem that may arise. It is understandably difficult for FEHD to gain entry to restaurants for inspections and investigations outside their business hours. The Department may explore other feasible ways such as conducting inspections when the restaurants are preparing for business or to close, thereby ensuring good cleanliness and hygiene outside business hours.

21. To enhance the effectiveness of its anti-rodent work, FEHD should broaden its channels for acquiring pest control knowledge and more proactively engage local universities and academic institutions to conduct relevant researches including the calculation of RIR, habits of active species of rodents in Hong Kong, as well as

preventive measures and tools suitable for curbing rodent infestation.

22. There may be room for improvement in FEHD's rodent prevention and disinfestation, but its efforts and achievements should not be denied. In responding to our request for information, all the four selected departments namely the Agriculture and Fisheries Conservation Department, Home Affairs Department, Housing Department and Leisure and Cultural Services Department made positive comments on the training and technical support provided by FEHD. Besides, FEHD has strengthened inter-departmental coordination in launching territory-wide and district anti-rodent operations and introduced targeted rodent prevention and control measures at district level. Members of the public would be pleased to see the increase in overall rodent disinfestation in recent years.

23. Undoubtedly, it is essential for the Government to formulate and implement effective strategies and measures to combat rodent infestation, but the role of the public in maintaining good environmental hygiene is equally important. Otherwise, however hard cleaning and pest control workers maintain cleanliness of public places and combat rodent infestation, if members of the public and shop operators fail to observe the rules and leave the environmental hygiene in poor condition, nuisances arising from rodent infestation would persist and society as a whole would suffer the consequence. Therefore, it is incumbent upon the Government and the public to make coordinated efforts for effective rodent prevention and control.

Use of Data on Rodent-related Complaints

24. Information revealed that FEHD has received an annual average of more than 10,000 rodent-related complaints in recent years, reflecting the public's great concern on rodent infestation. This Office has requested FEHD to provide analyses on the details of and locations involved in rodent-related complaints regarding the three administrative districts with a relatively higher number of complaints (namely Sham Shui Po, Central and Western District and Kowloon City). Yet, FEHD could only give a brief account of the situation. It also indicated that the number of rodent-related complaints was subject to such factors as the geographical location and demographics, and therefore it would not assess rodent infestation in individual administrative districts by considering complaint figures alone. FEHD is seemingly not well aware of the trend of complaints and the public's concern.

25. In our opinion, the number of rodent-related complaints is no doubt an important

indicator as to whether rodent infestation has generally affected the public's daily life. Meanwhile, the details of complaints can reflect which locations are hotspots of rodent activities that attract wide public concerns and carry higher risks. Hence, FEHD should allocate more resources to collate and analyse rodent-related complaints for more effective deployment of manpower and resources to venues requiring more intensive cleaning and better planning for rodent prevention and disinfestation. With the introduction of a "composite RIR" as stated in **paragraph 7** above, together with analyses of the details of complaints, FEHD should be able to better understand the extent of rodent infestation and adopt more targeted measures.

26. According to FEHD, it has since October 2021 included analysis of hotspots in its Complaints Management Information System ("CMIS") to facilitate more effective deployment of manpower and resources in anti-rodent work. We will follow up with FEHD to ensure that the upgraded CMIS will achieve administrative effectiveness to our expectation and be able to address public concerns about rodent infestation.

Recommendations

27. We recommend that FEHD:

<u>RISs</u>

(1) review the existing methodology of RISs and examine whether factors which may help assess the extent of rodent infestation can be incorporated in the calculation of RIR for formulation of a "composite RIR". Where necessary, FEHD may engage local universities and academic institutions to participate in relevant researches;

(2) consider conducting RISs more frequently each year to improve the validity of survey results and exploring appropriate manpower arrangements to cope with the additional workload;

(3) introduce administrative measures, including a comprehensive review of relevant guidelines, regular briefings and random surprise checks during survey periods, to ensure that frontline staff conduct RISs in an appropriate manner;

(4) review the existing classification of RIR and contents of the prevailing Technical Circulars, and make appropriate adjustments and amendments as necessary;

Rodent Prevention and Disinfestation

(5) strengthen the training for frontline and supervisory staff on the correct use of tools and equipment for rodent disinfestation;

(6) conduct intensive surprise inspections, strictly enforce the tenancy terms and actively explore invoking applicable legislation to step up enforcement actions to urge market stall tenants to properly clean their stalls and the surrounding areas. On manpower deployment, FEHD should explore how to empower the management staff of contractors to enhance the effectiveness of enforcement actions. For districts without sufficient resources for intensive inspections, FEHD should adopt a risk-based approach and take targeted enforcement action at public markets in poorer hygiene condition;

(7) strengthen the education for market stall tenants and consider exploring such possible ways as establishing guidelines to set objective standards for the cleanliness of stalls;

(8) consider introducing a review mechanism setting out factors for consideration and standards under a risk-based approach in order to work out systematically a list of markets requiring stepped-up cleanliness and anti-rodent control. FEHD should in parallel review the effectiveness of the district intensive cleaning programme and the intensive anti-rodent operations being piloted. Subject to the results and resources, FEHD should consider extending the schemes to markets in need;

(9) examine whether the existing mechanism for monitoring the cleanliness of shops adjoining rear lanes (especially restaurants) is effective, and explore ways to handle the after-hours cleanliness problem that may arise. Where necessary, FEHD should implement enhanced measures including regularising the special operations to combat rodent infestation at rear lanes, arranging more frequent inspections and taking

more stringent enforcement actions;

(10) strengthen the cooperation with local universities and academic institutions in conducting researches to enhance the effectiveness of anti-rodent work. Research topics may include the calculation of RIR, habits of active species of rodents in Hong Kong, and preventive measures and tools suitable for curbing rodent infestation; and

Use of Data on Rodent-related Complaints

(11) allocate more resources to collate and analyse rodent-related complaints for more effective deployment of manpower and resources to venues requiring more intensive cleaning and better planning for rodent prevention and disinfestation.

Office of The Ombudsman
May 2022

1

INTRODUCTION

BACKGROUND

1.1 Rodent infestation has been an issue of wide public concern. Currently, the Pest Control Advisory Section ("PCAS") of the Food and Environmental Hygiene Department ("FEHD") and the Pest Control Sections under the Department's District Environmental Hygiene Offices ("DEHOs")[1] are responsible for rodent prevention and disinfestation in ordinary public places. Their duties include conducting rodent infestation surveys ("RISs"), carrying out inspections at places with potential risks of rodent infestation (such as rear lanes and illegal refuse disposal blackspots) and taking necessary preventive and control measures. FEHD also provides training and technical support for other Government departments and organisations[2] regarding rodent prevention and control at public venues and premises under the latter's management.

1.2 There are views that FEHD's rodent control has been ineffective and that the results of its RISs could not reflect the actual situation of some locations.

1.3 Rodent infestation can cause nuisances to the daily life of the general public and spread different types of serious diseases. According to media reports, since the world's first case of human infection of rat Hepatitis E virus was found in Hong Kong in 2018, more than 10 cases had been recorded as at December 2020. Moreover, there were grave problems of rodent infestation in a number of FEHD's public markets in 2020. All these have made rodent infestation a much-concerned issue. Our direct investigation aims to examine the effectiveness of FEHD's rodent prevention and control work and make recommendations for improvement where necessary.

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[1] As at December 2020, FEHD's PCAS had a staff of 97; its Pest Control Sections comprised 740 in-house members and 2,178 frontline members of contractors' roving teams.

[2] They include the Development Bureau ("DEVB"), Education Bureau ("EDB"), Agriculture, Fisheries and Conservation Department ("AFCD"), Architectural Services Department ("ArchSD"), Buildings Department ("BD"), Civil Engineering and Development Department ("CEDD"), Correctional Services Department ("CSD"), Drainage Services Department ("DSD"), Electrical and Mechanical Services Department ("EMSD"), Environmental Protection Department ("EPD"), Government Logistics Department ("GLD"), Hospital Authority ("HA"), Department of Health ("DH"), Highways Department ("HyD"), Home Affairs Department ("HAD"), Housing Department ("HD"), Information Services Department ("ISD"), Immigration Department ("ImmD"), Labour Department ("LD"), Lands Department ("LandsD"), Leisure and Cultural Services Department ("LCSD"), Marine Department ("MD"), Social Welfare Department ("SWD"), Transport Department ("TD") and Water Supplies Department ("WSD").

PROCESS OF INVESTIGATION

1.4 On 11 January 2021, The Ombudsman launched a direct investigation against FEHD, pursuant to section 7(1)(a)(ii) of The Ombudsman Ordinance. On 14 January, this Office issued a press release, inviting members of the public to provide views on this topic. Meanwhile, we requested four departments that work closely with FEHD on rodent control, namely AFCD, HAD, HD and LCSD, to provide information on their collaboration with FEHD.

1.5 This Office received a total of 16 written submissions from the public, among which there were reports on rodent infestation in some districts and particular venues such as markets and elderly homes, and suggestions on pest control measures. Some respondents questioned the effectiveness of rodent prevention and control devices purchased by FEHD. Moreover, we had meetings with persons from the local community and concern groups to seek their views and comments on FEHD's rodent control work.

1.6 On 25 November 2021, we issued a draft investigation report to FEHD, AFCD, HAD, HD and LCSD for comments, and received their feedback between 6 December 2021 and 6 January 2022. Upon considering and incorporating their comments as appropriate, we completed this final report on 24 May 2022.

2

RODENT CONTROL STRATEGIES

PEST CONTROL STEERING COMMITTEE

2.1 The Pest Control Steering Committee[3] ("PCSC") led by the Food and Health Bureau ("FHB") was set up to strengthen prevention, coordination and surveillance in Government's rodent control, with the target of eliminating the three fundamental survival conditions of rodents, namely food (eliminating the food sources), harbourage (eliminating hiding places) and passages (blocking the dispersal routes) so as to combat rodent infestation in various districts.

2.2 In 2020 and 2021, PCSC has formulated a number of work objectives, major ones being facilitating the communication and coordination among departments/organisations in stepping up rodent prevention and control in places with more serious rodent problems such as public housing estates, rear lanes and markets, strengthening rodent surveillance as well as enhancing the effectiveness of rodent disinfestation.

FEHD's ROLE AND RESPONSIBILITIES

2.3 FEHD oversees rodent prevention and disinfestation in ordinary public places and provides relevant training and technical support for other government departments at public venues and premises under the latter's management. As a member of PCSC, FEHD is the executive arm to implement the policies and action plans formulated by PCSC, and provide professional advice and technical support to the committee on rodent prevention and disinfestation. Such advice and support include analysis of and reports on rodent infestation in various districts in Hong Kong, testing of new technologies of rodent control, and recommendations of rodent prevention and disinfestation to other departments and coordination of related work.

2.4 In 2020 and 2021, with PCSC taking the lead and promoting the work, FEHD

[3] PCSC comprises members from DEVB, EDB, AFCD, ArchSD, BD, CEDD, DH, DSD, EMSD, EPD, FEHD, Government Property Agency, HyD, HAD, HA, HD, ISD, LandsD, LCSD, MD, SWD, TD and WSD.

implemented a number of action plans including:

Rodent Surveillance:

- Since 2020, FEHD has conducted field trials of thermal imaging cameras operated with artificial intelligence at many locations to record rodent activities and their extent. FEHD is planning to adopt this technology in anti-rodent operations in designated target areas to assess and increase the effectiveness of rodent control (see **para. 4.32**).

- FEHD has since 2021 stepped up the data sharing with other departments regarding the Rodent Infestation Rate ("RIR") (see **para. 3.11**) to facilitate the latter's preparation for anti-rodent operations in venues under their management. It has also started to release the rodent infestation data recorded in all survey locations (see **para. 3.12**).

Rodent Prevention and Disinfestation:

- FEHD has regularised the deep cleansing and disinfection work at public markets in various districts (see **para. 4.21**) to deal with the environmental hygiene problems and potential risk of rodent infestation. Since October 2020, FEHD has extended the intensive anti-rodent operations to 73 of its markets with higher patronage (see **para. 4.20**). Moreover, FEHD has shared its experience of anti-rodent operations with HD and the Link Real Estate Investment Trust ("Link REIT") and provided suggestions for rodent control during joint operations.

- Comparing with 2019, there was an increase in the numbers of live rodents caught and dead rodents collected by FEHD (see **Figure 16**) in 2020 with a reduction in the number of complaints about rodent infestation (see **Table 9**).

Inter-departmental collaboration:

- FEHD and HD have set up a joint Working Group on Rodent Prevention and Control to strengthen the curb on rodent infestation in public rental housing estates ("PRHs"). In 2020, the two departments conducted joint inspections at nine PRHs, and FEHD made recommendations on how anti-rodent work should be stepped up. Pursuant to FEHD's recommendations, as at October 2021, HD had installed about 18,900 rat guards at suitable locations of the external walls of estate buildings and conducted trial runs on the use of thermal imaging cameras in some PRHs for rodent surveillance and better deployment of anti-rodent operations.

- FEHD and HAD continued to refer cases involving rear lanes with

hygiene problems to HyD. Between June 2019 and December 2021, HyD completed 289 items of improvement work in rear lanes to eliminate rodents' hiding places and block their dispersal routes. HyD would continue to carry out appropriate improvement works in rear lanes depending on the local views and hygiene condition.

3

RODENT SURVEILLANCE

INTERNATIONAL PRACTICES

3.1 There is no universal standard of RIR. In 1987, the World Health Organisation ("WHO") proposed conducting checks on a random sample of 500 households in every 10,000 households to assess rodent infestation. The Centers for Disease Control and Prevention of the United States uses this assessment method to monitor rodent infestation while the United Kingdom conducts household surveys for the same purpose. In Singapore, there is no regular compilation of rodent infestation rates. Its assessment of rodent infestation relies mainly on government contractors' routine inspections to locate food source and hiding places of rodents and look for rat holes.

RODENT INFESTATION SURVEY

3.2 Having made reference to the practices in other countries and regions and taken into account various factors such as the local climate, environmental conditions and habits of rodents, FEHD introduced RISs in 2000 to assess the extensiveness of rodent infestation in various districts by analysing the ratio of census baits gnawed by rodents at designated survey locations.

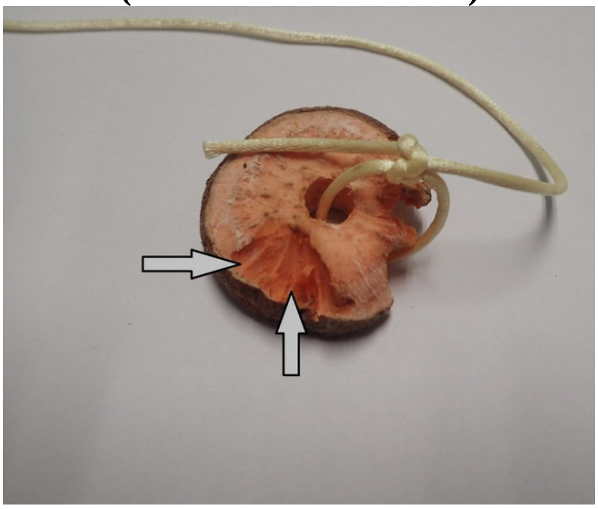
3.3 Currently, FEHD conducts RISs within 50 designated survey locations[4] in 19

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[4] The 50 designated survey locations include: (Central and Western District) Wellington Street, Queen's Road Central (Sheung Wan), Third Street; (Eastern District) Sheung On Street and Fung Yip Street, King's Road (North Point), Tsat Tsz Mui Road; (Southern District) Lee Hing Street, Wah Fu Road, Aberdeen Praya Road (Aberdeen and Tin Wan); (Wan Chai District) Lockhart Road (Wan Chai); (Islands District) San Hing Street (Cheung Chau), Yu Tung Road; (Yau Tsim District) Nathan Road (Tsim Sha Tsui), Shanghai Street; (Mong Kok District) Nathan Road (Mong Kok), Prince Edward Road West (Prince Edward); (Sham Shui Po District) Shun Ning Road, Kwong Lee Road, Pei Ho Street; (Kowloon City District) Ma Tau Wai Road, Nga Tsin Wai Road (Kowloon City), Muk Chui Street; (Wong Tai Sin District) Clear Water Bay Road (Choi Hung), Po Kong Village Road (Wong Tai Sin), Tai Yau Street; (Kwun Tong District) Yee On Street and Shui Wo Street, Hoi Yuen Road and Hung To Road, Lei Yue Mun Road (Yau Tong); (Sai Kung District) Po Ning Road, Po Tung Road, Po Lam Road North; (Sha Tin District) Hang Hong Street, Sha Kok Street, Wo Che Street; (Tai Po District) Kwong Fuk Road, On Po Road; (North District) On Kui Street, San Hong Street, Pak Wo Road (Sheung Shui); (Kwai Tsing District) Tsing King Road and Tam Kon Shan Road, Tai Wo Hau Road, Cheung Wing Road and Wo Yi Hop Road; (Tsuen Wan District) Chung On Street and Sha Tsui Road, Chai Wan Kok

administrative districts (with one to three survey locations in each administrative district) throughout Hong Kong. These survey locations covering three biotopes bustling with human activities, namely residential areas, rear lanes and industrial areas, are rodent-infested areas or places likely to have rodent problems. Rodents have their ranges of activity, and physical barriers such as carriageways and high walls can restrict their activities. Hence, broad carriageways usually serve as boundaries separating one survey location from another. Depending on the size of each survey location, FEHD would place 40 to 60 census baits (a piece of uncooked sweet potato)[5]. During the survey period, FEHD would place about 2,700 census baits in total at survey locations. Baits are set at a distance of about 50 metres apart to prevent the same rodent from gnawing on two or more pieces of baits thereby affecting the accuracy of RIR[6]. The survey in each survey location lasts for three days two nights. This arrangement can prevent the baits from being eaten up and allow the collection of clear gnawing marks (see **Figure 1**) because rodents usually do not finish the whole piece of bait but attempt to gnaw on it during the first two days. Given that it usually takes six months to complete a survey covering 50 survey locations, FEHD can conduct two surveys at each survey location each year.

Figure 1: A census bait with gnawing marks
(Source: FEHD website)



Compilation and Levels of RIR

3.4 Upon completion of the survey at each survey location, FEHD would count

Street; (Tuen Mun District) Tip King Road, Pui To Road (Tuen Mun Industrial Area), Tsing Tin Road and Ming Kum Road; (Yuen Long District) Castle Peak Road – Yuen Long, Tin Shui Road, Hung Yuen Road.

5 Having conducted tests and considered a number of factors including the local climate and habit of rodents to frequently gnaw, FEHD has concluded that uncooked sweet potato is the suitable census bait for checking rodents' gnawing.

6 Where a census bait is clearly separated from another such that rodents cannot get close to more than one piece of bait, the restriction on 50-metre distance shall be lifted.

the number of baits **gnawed by rodents** to calculate the RIR[7] so as to assess the extensiveness of rodent infestation at individual survey locations.

3.5 The RIR is divided into three levels:

- Level 1: the rate is below 10%, indicating that rodent infestation is not extensive. Anti-rodent work should be targeted at the location(s) where rodent infestation is found during RIS;
- Level 2: the rate ranges from 10% to below 20%, reflecting slightly extensive rodent infestation which warrants more stringent anti-rodent work by FEHD at the survey location(s) concerned. Anti-rodent work should cover the entire range of rodent activities; and
- Level 3: the rate is 20% or above, indicating that rodent infestation is extensive and that an inter-departmental working group should be formed by FEHD to coordinate anti-rodent operations at district level, which include stepped-up cleansing services, assistance to relevant departments in carrying out anti-rodent work within areas under their management and publicity in the community regarding rodent prevention and control.

3.6 During the survey period, FEHD would suspend disinfestation of rodents at the survey locations until completion of the survey to prevent interference with RIS. On the first day of the survey, frontline staff would hang census baits with warning notices on supporting objects such as water pipes and pillars (about one to two centimetres above the ground) to collect rodents' gnawing marks, and check the baits on the two subsequent days. Baits found with gnawing marks or to have gone stale due to weather (e.g. raining) would be replaced. In case the census baits are tampered with (e.g. being moved), frontline staff would try to put them back to their original locations. If it is not possible to do so, the staff would exclude these baits when calculating the RIR. If more than 10% of the baits have been tampered with, FEHD would conduct another survey at the survey location concerned.

Our Site Inspections

3.7 In August 2021 during FEHD's RIS in Wan Chai, our staff visited some survey locations near Bowrington Road Market and in the vicinity of Tonnochy Road and Fleming Road. We found that the arrangements generally corresponded with the description in **paragraphs 3.3 and 3.6** (see **Figures 2 to 4**) except that some of the census baits did not bear any warning notice (see **Figures 5 and 6**). FEHD indicated that if baits

7

$$\text{RIR} = \frac{\text{Number of census baits gnawed by rodents}}{\text{Total number of census baits collected from a survey location}} \times 100\%$$

were found without warning notice or with a defective warning notice, it would attach one to the baits or replace the defective one. As regards our observation that there were poisonous baits in some rear lanes with a warning notice posted within the survey locations (see **Figures 7 to 10**), FEHD responded that it would pay attention and suspend anti-rodent operations during the survey period (see **para. 3.6**).

Figures 2 to 4: Photographs taken during FEHD's RIS in the vicinity of Tonnochy Road and Fleming Road in Wan Chai (with a warning notice) (Taken by our staff in August 2021)

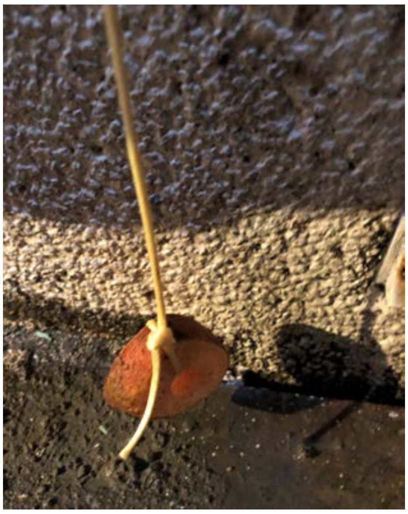






Figures 5 and 6: Photographs taken during FEHD's RIS near Bowrington Road Market (without a warning notice) (Taken by our staff in August 2021)





Figures 7 to 10: Photographs showing the poisonous baits and warning notices that our staff found at some rear lanes within the area covered by RISs (Taken by our staff in August 2021)









Review of RISs

3.8 Each year, FEHD reviews whether adjustment should be made to the number of survey locations and coverage of the RISs. Factors for consideration include the urban development, local views and the RIR of each survey location. Based on the result of the recent review, FEHD increased the number of survey locations in the second half of 2020 from 41 to 50 (see **para. 3.3**).

3.9 FEHD had previously considered introducing a combined non-toxic bait "Nara Bloc" for conducting RISs. However, on-site tests revealed that sweet potato was more appealing for rodents[8], and therefore "Nara Bloc" was eventually not introduced. Meanwhile, in collaboration with the Chinese University of Hong Kong and the City University of Hong Kong, FEHD is conducting a research on local species of rodents in Hong Kong to examine their food preference in order to introduce more suitable census baits for RISs. Data analysis for the research is in progress.

Staff responsible for RISs

3.10 While PCS staff of DEHOs are responsible for routine work of rodent prevention and disinfestation, RISs are conducted by six PCAS staff members of FEHD (three Pest Control Assistants II, one Laboratory Attendant and two Workmen II dividing into three teams). Such arrangement is to avoid conflict of roles and ensure that surveys are conducted independently and impartially. As regards the existing practice of conducting RISs at a six-month interval (see **para. 3.3**), FEHD explained that a surveillance cycle of six months is appropriate because rodents have a rather long life cycle which ranges from one and a half to three years. Hence, FEHD has been conducting RISs every six months since 2000.

Release of RIR data

3.11 Upon completion of the RIS at each survey location, FEHD will release the RIS results and the layout plans of survey locations to the DEHO concerned and the Inter-departmental Working Group[9] by email to facilitate rodent prevention and disinfestation by the respective units. For enhancing data sharing with other departments, FEHD has uploaded the RIR data to the Lands Department's Geospatial Information Hub as well starting from June 2021. By accessing the system, DEHOs and members of the Inter-departmental Working Group can obtain the RIR data regarding all survey locations, which include RIRs and locations of all census baits (including those found to have been gnawed by rodents).

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[8] Between May and September 2019, FEHD had carried out on-site tests at rear lanes in Tsuen Wan, Tuen Mun, Eastern District, Southern District and Wan Chai to assess the effectiveness of "Nara Bloc". The results revealed that given the same number of baits, the gnawing rate of sweet potato was 4.54% and that of "Nara Bloc" was only 0.41%.

[9] The Inter-departmental Working Group comprises members from AFCD, ArchSD, BD, CEDD, CSD, DSD, EDB, EMSD, EPD, GLD, HA, DH, HyD, HAD, HD, ImmD, LD, LandsD, LCSD, MD, SWD, TD and WSD.

3.12 Besides, FEHD will make available the results of RISs on its website for the public. FEHD used to release the District RIR[10] of each of 19 administrative districts every six months and the Overall RIR[11] (for the first half and second half of the year and for the whole year). Since the second quarter of 2021, in addition to the District RIRs and the Overall RIR, FEHD has been releasing the RIRs of individual survey locations for public inspection upon completion of the survey to urge prompt action by relevant parties. (Note: In accordance with the new practice, FEHD has edited and uploaded the RIR data of all survey locations in 2020).

Limitations of RISs and Trend Analysis

3.13 FEHD's RISs aim mainly to assess the extensiveness of rodent infestation at the public places within survey locations, but they cannot reveal the actual number of rodents and the frequency of their appearances. For example, an RIR of 5% recorded in a survey location means there are rodent activities in 5% of the area within the survey location. The number of rodents and the frequency of their appearances, however, cannot be reflected. Moreover, as rodents often appear in different places and RISs are mainly conducted outdoor, some rodent-infested places may not be covered in RISs. Hence, the RIRs cannot reflect the extent of rodent infestation in private venues and indoor places such as residential buildings, shopping malls and market complexes.

3.14 Given these limitations, FEHD only takes the RIRs as an ancillary tool for rodent surveillance so that it can formulate and adjust its anti-rodent work in each administrative district. FEHD does not consider the RIRs as the only objective indicator for assessing the extent of rodent infestation. For comprehensive assessment of rodent infestation in various administrative districts, FEHD's frontline staff will conduct regular inspections to check rodent activities (see **para. 4.1**), handle rodent-related complaints (see **para. 4.34**) and collect views from local community and the public (including having regular meetings with District Councils and their subcommittees, organising occasional joint inspections with District Council members or local groups, and reaching out to the public via anti-rodent promotional events).

3.15 Information provided by FEHD shows a slightly upward trend in the Overall RIRs between 2014 and mid-2021, during which the rates generally remained stable at a low level between 2.8% and 4.2%, indicating that rodent infestation was not extensive (see **Figure 11**). Though that the District RIRs in some administrative districts were higher than the Overall RIR, most of them were still at Level 1. Only some administrative

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10

$$\text{District RIR} = \frac{\text{Number of baits gnawed by rodents at the survey locations within the district}}{\text{Total number of baits collected from the survey locations within a particular district}} \times 100\%$$

11

$$\text{Overall RIR} = \frac{\text{Number of baits gnawed by rodents at all survey locations}}{\text{Total number of baits collected from all survey locations}} \times 100\%$$

districts had recorded half-yearly/yearly District RIRs at Level 2 (see **Table 1**). Moreover, no steadily increasing trend had been detected in any administrative district. After targeted anti-rodent operations were conducted in the administrative districts with higher RIR, the rates all dropped to lower levels.

Figure 11: Overall RIRs between 2014 and 2021
(Source: FEHD)

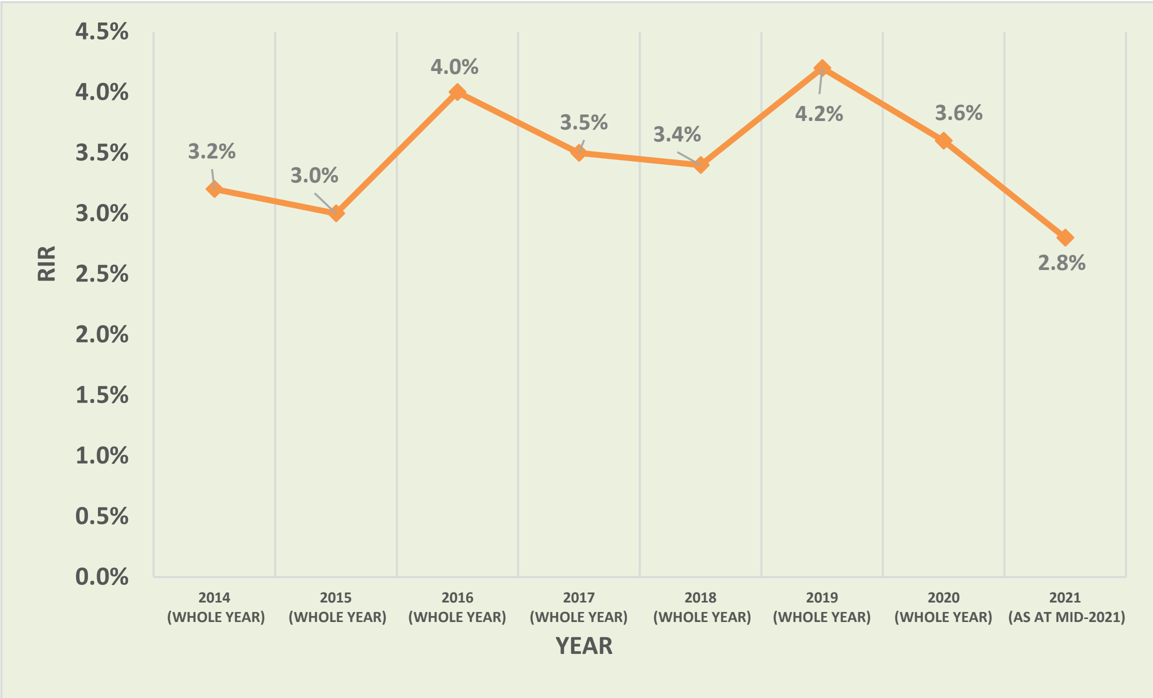


Table 1: RIRs between 2014 and 2021

Year	Overall RIR of Hong Kong	Administrative districts having recorded an RIR at Level 2 (Time/RIR)	The highest District RIR recorded in the year (all at Level 2 or below)	The lowest District RIR recorded in the district(s) concerned in the subsequent year after follow-up action had been taken (all at Level 1)
2014	3.2%	Kowloon City District (Second half of the year/11.1%)	Kowloon City District (11.1% (Level 2))	Kowloon City District (Second half of 2015/0.0%) (Level 1)
2015	3.0%	All administrative districts at Level 1	Kowloon City District (8.3% (Level 1))	Kowloon City District (Second half of 2015/0.0%) (Level 1)
2016	4.0%	Sham Shui Po District (Second half of the year/10.0%)	Sham Shui District (10.0% (Level 2))	Sham Shui Po District (First half of 2017/5.9%) (Level 1)
2017	3.5%	All administrative districts at Level 1	Mong Kok District (7.1% (Level 1))	Mongkok District (First half of 2018/5.2%) (Level 1)
2018	3.4%	Kowloon City District (Second half of the year/11.1%)	Kowloon City District (11.1% (Level 2))	Kowloon City District (First half of 2019/4.9%) (Level 1)
2019	4.2%	Wan Chai District (Second half of the year/17.9%； Whole year/11.7%） Kwun Tong District (Second half of the year/12.8%)	Wan Chai District (17.9% (Level 2))	Wan Chai District (First half of 2020/0%) (Level 1) Kwun Tong District (First half of 2020/1.3%) (Level 1)
2020	3.6%	Yau Tsim District (Second half of the year/10.1%) Tai Po District (Second half of the year/10.1%)	Yau Tsim District (10.1% (Level 2)) Tai Po District (10.1% (Level 2))	Yau Tsim District (Second half of 2021/5.5%) (Level 1) Tai Po District (First half of 2021/4.5%） (Level 1)）
2021 (As at mid-2021)	2.8%	Yau Tsim District (First half of the year/12%)	Yau Tsim District (12% (Level 2))	Yau Tsim District (Second half of 2021/5.5%) (Level 1)

3.16 From the second quarter of 2021 onwards, FEHD has modified the release of RIRs by publishing also the RIRs recorded in all survey locations, the District RIRs and the Overall RIR of Hong Kong (see **para. 3.12**). After examining the RIR data of the first half of 2021 and the reprocessed data of 2020 on FEHD's website, we agree that the survey results are now presented in a more accurate and objective manner such that the RIRs may vary from one survey location to another within an administrative district, or there may be apparent discrepancy in District RIRs. For example, the RIRs recorded in three survey locations within Sha Tin District in 2020 were 2.6% (Level 1), 3.5% (Level 1) and 19.2% (Level 2), the largest discrepancy of which was 16.6%. Besides, while the District RIR of Sha Tin was 6% (Level 1), the RIRs recorded in the survey locations ranged from 2.5% to 13.2%, showing a significant discrepancy.

RAT FLEA SURVEY

3.17 Due to the outbreak of plague in Hong Kong in the late 19th century and early 20th century, FEHD has continued to conduct rat flea surveys to monitor the risk of plague[12].

3.18 Each year, FEHD chooses one biotope and selects 12 survey locations to conduct a rat flea survey in two phases with each phase lasting for six months. For example, outdoor markets were chosen in 2018, housing estates in 2019 and typhoon shelters and villages in 2020. During each phase, PCAS staff would place census baits and traps at the survey locations to capture live rodents. Rodents caught would then be sent to the laboratory for calculating the Rat-flea index[13]. WHO has reported that a Rat-flea Index of greater than 1 represents an increased potential plague risk for human. Upon completion of the survey, FEHD would release the results to DEHOs and relevant departments for conduct of intensive anti-rodent and anti-rat-flea operations at the survey locations. Between 2016 and 2020, the Rat-flea Indices recorded at the biotopes chosen by FEHD were all lower than 1, ranging from 0.04 to 0.96.

PREVENTION AND CONTROL OF RODENT-BORNE DISEASES

Types of Rodent-borne Diseases and Prevention

3.19 Among the 51 infectious diseases that should be reported under the Prevention and Control of Disease Ordinance, nine are rodent-borne diseases, namely Scrub typhus, Urban typhus, Spotted fever, other Rickettsial diseases, plague, Relapsing fever, Hantavirus infection, Leptospirosis and Q fever. Between 2016 and 2020, more cases of Scrub typhus and Spotted fever were reported each year (13 to 34 cases) (see **Table 2**)

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12 According to the information provided by DH, there has been no local or imported cases of plague since 1997.

13

$$\text{Rat-flea Index} = \frac{\text{Number of fleas collected from the rodents caught}}{\text{Total number of rodents caught}}$$

while other rodent-borne diseases accounted for less than 10 cases each year. No cases of plague and Relapsing fever were recorded during the period.

Table 2: Number of cases involving rodent-borne diseases between 2016 and 2020 (Scrub typhus and Spotted fever)

		Year				
		2016	**2017**	**2018**	**2019**	**2020**
Scrub typhus	**Number of local cases**	21	23	15	10	29
	Number of imported cases	0	2	1	3	0
	Number of unclassified cases	0	2	1	1	0
	Total number of cases	**21**	**27**	**17**	**14**	**29**
Spotted fever	**Number of local cases**	22	13	20	30	16
	Number of imported cases	0	0	0	1	0
	Number of unclassified cases	1	0	2	3	2
	Total number of cases	**23**	**13**	**22**	**34**	**18**

3.20 FEHD has issued guidelines on the prevention and control of the rodent-borne diseases mentioned in **the preceding paragraph**. On receiving a reported case of rodent-borne disease from DH, FEHD would conduct a causative agent investigation within 150 metres of all places that the patient has visited (including the patient's residence and working place) (hereinafter referred to as "reported areas") 21 or 28 days prior to the diagnosis depending on the type of diseases (direct transmission from rodents to humans or transmission via the ectoparasites of rodents) and case category (local or imported cases). Besides, FEHD would carry out anti-rodent and pest control work. While it is not necessary for FEHD to conduct a causative agent investigation on imported cases, the Department would monitor the infestation of rodents and parasites within the reported areas and, where necessary, step up pest control. As regards local cases, FEHD needs to conduct a causative agent investigation in the reported areas. Where environmental hygiene problems, rodent activities or causative agents are found, FEHD would arrange cleaning and rodent disinfestation and/or pesticide operations which include poisoning with baits, spraying pesticides and antiseptic in a timely manner. Meanwhile, FEHD would also send the case information to other relevant departments/organisations for necessary follow-up action in venues under the latter's management.

Rat Hepatitis E

3.21 Rat Hepatitis E has become a disease of public concern. As DH is yet to confirm the source and transmission channels, rat Hepatitis E has not been categorised as a rodent-borne disease. Currently, it is included in the category of Hepatitis E which is one of the notifiable infectious diseases. According to DH, symptoms of Hepatitis E

include fever, nausea, vomiting, abdominal pain and jaundice. Most patients can recover from the disease by receiving supportive treatment for one to six weeks. Nevertheless, some high-risk patients such as elder patients suffering from serious chronic diseases, patients who have received transplant and pregnant women may show severe symptoms. Since the first local case of rat Hepatitis E was found in 2018, there had been a total of 15 cases as at December 2020 (see **Table 3**).

Table 3: Number of rat Hepatitis E cases between 2018 and 2020

	Year		
	2018	**2019**	**2020**
Number of local cases	2	4	5
Number of imported cases	0	0	0
Number of unclassified cases	0	2	2
Total number of cases	**2**	**6**	**7**

3.22 As rat Hepatitis E has not yet been categorised as rodent-borne disease, FEHD does not have any operation guideline on the prevention and control of rat Hepatitis E as it does with other rodent-borne diseases. Currently, when dealing with reported cases of rat Hepatitis E, FEHD refers to the guidelines on the prevention and control of rodent-borne diseases directly transmissible from rodents to humans (see **para. 3.20**). In this connection, we have examined FEHD records on four rat Hepatitis E cases handled between September and November 2020 and confirmed that causative agent investigations, cleansing of public places and rodent disinfestation had been conducted and arranged within the reported areas, and that enforcement action had been taken against individual non-compliant venues. Besides, FEHD had informed relevant Government departments of such cases for the latter to step up their prevention and control work within the reported areas.

4

RODENT PREVENTION AND CONTROL WORK

OVERVIEW

4.1 For assessment of rodent infestation, FEHD has all along made reference to the trend of RIRs and statistics on rodent-related complaints in various administrative districts, gauged views from local community and members of the public and arranged frontline staff to investigate traces of rodent activities (such as faeces, gnawing marks, rodent smears and rat holes). On rodent control, FEHD mainly adopts an integrated approach recommended by WHO to conduct anti-rodent operations at rodent infested areas. By improving the environmental hygiene, the three fundamental survival conditions of rodents, namely food, harbourage and passages (i.e. eliminating the food sources and hiding places of rodents and blocking their dispersal routes) (see **para. 2.1**) would be eliminated. In addition, direct methods such as poisoning with baits, capturing and destroying rat holes will be employed to ensure long-lasting prevention and control.

4.2 Moreover, FEHD will take enforcement action, collaborate with other bureaux/departments and provide training and technical support so as to strengthen rodent prevention and control at district level.

RODENT DISINFESTATION

4.3 Trapping and poisoning with baits are two major ways adopted by FEHD for rodent control.

4.4 According to FEHD's Pest Control Technical Circulars ("Technical Circulars"), traps (Note: mainly rat cages; break-back traps are only used in indoor settings where no other small animals will visit or where it is too narrow for placing rat cages) should be placed for a trapping period of at least five consecutive nights during each anti-rodent operation. During the trapping period, pest control staff will record and assess the number of rodents captured by the traps each day to determine proper schedules for placement of traps. Sweet potatoes or dried squid, with their sweetness and aroma to attract rodents, are commonly-used baits which will not cause much nuisance to

environmental hygiene. Depending on the actual environment and types of rodents, pest control staff may use other food such as siu mei, fish and fish sausages as baits. In case there are still rodents found in the traps when the trapping period ends, pest control staff should start another trapping period and adjust the number and location of traps until rodent infestation is under control.

4.5 Pest control staff will quickly kill any live rodents captured by breaking their necks. Should there be any need to test the suitability of poisonous baits for local use or carry out virus and pathology tests (such as Rat-flea survey, see **paras. 3.17-3.18**), pest control staff will send captured live rodents to laboratory where the rodents would be fed and then poisoned for post-mortem examination and sample collection. Rodents killed by break-back traps will be sterilised and packed before disposal in refuse collection points.

4.6 Currently, FEHD uses poisonous baits with "multiple-dose" and "single-dose" rodenticides which contain chronic anticoagulant. These two types of rodenticides are widely used in many countries, and have been tested by FEHD[14]. While "multiple-dose" rodenticides have to be mixed with raw rice, sugar and oil in appropriate proportion to attract rodents, "single-dose" rodenticides are readily used as food components have been added by manufacturers. According to the Technical Circulars, pest control staff would inspect each baiting point at intervals of four days, three days and five days after placing baits. These follow-up inspections aim to replenish consumed baits and record the quantity of baits taken at different locations. Where a bait is found completely consumed, pest control staff will refill double portions at the baiting point or add an extra baiting point in the vicinity. On the contrary, if a bait is found intact during two consecutive inspections, pest control staff will abandon the baiting point concerned.

4.7 The statistics on rodent traps and poisonous baits used by FEHD in various districts of Hong Kong between 2016 and 2020 are set out in **Table 4**.

Table 4: Statistics on rodent traps and poisonous baits used by FEHD between 2016 and 2020

	2016	2017	2018	2019	2020
Use of rodent traps (Frequency)	53,477	54,438	60,432	68,490	81,830
Placement of poisonous baits (Frequency)	841,995	892,660	980,528	1,177,461	1,211,237

4.8 FEHD's poisonous baits are packed in transparent plastic bags to avoid being dampened or washed away during street cleansing, but the plastic bags are punched to

14 Live rodents captured during anti-rodent operations will be administered poisonous baits in the laboratory for testing purpose. FEHD staff will monitor and record the reaction of rodents poisoned and calculate the time from the rodents' consumption of baits to their death. Baits are considered effective if the poisoned rodents die within 7 days on average.

make the baits noticeable to rodents. Nevertheless, we found during two site inspections that the poisonous baits had not been handled as required. On the first occasion in early January 2021, we found that the plastic bag containing baits outside Diamond Hill MTR Station was not punched (see **Figures 12 and 13**). FEHD subsequently issued a verbal warning to the contractor concerned. In this regard, FEHD has progressively included in new contracts with pest control contractors the requirement that packets of poisonous baits must be punched before use. Violation of such requirement will be deemed as a serious default. On another occasion, our staff joined FEHD staff and its contractor in an inspection at To Kwa Wan Market during the anti-rodent operation in August 2021 (see **paras. 5.24-5.28**). We found that the packet of poisonous baits placed at the ground-floor refuse room was not punched (see **Figures 14 and 15**). The contractor alleged that rodents would tear the packing and take the poisonous baits. FEHD agreed that such allegation reflected the contractor's misinterpretation and mishandling and the Department had made rectifications accordingly.

Figures 12 and 13: A packet of poisonous baits placed outside Diamond Hill MTR Station was found not punched (Photographs taken in January 2021)





Figures 14 and 15: A packet of poisonous baits was found not punched during our site inspection at To Kwa Wan Market (Photographs taken in July 2021)



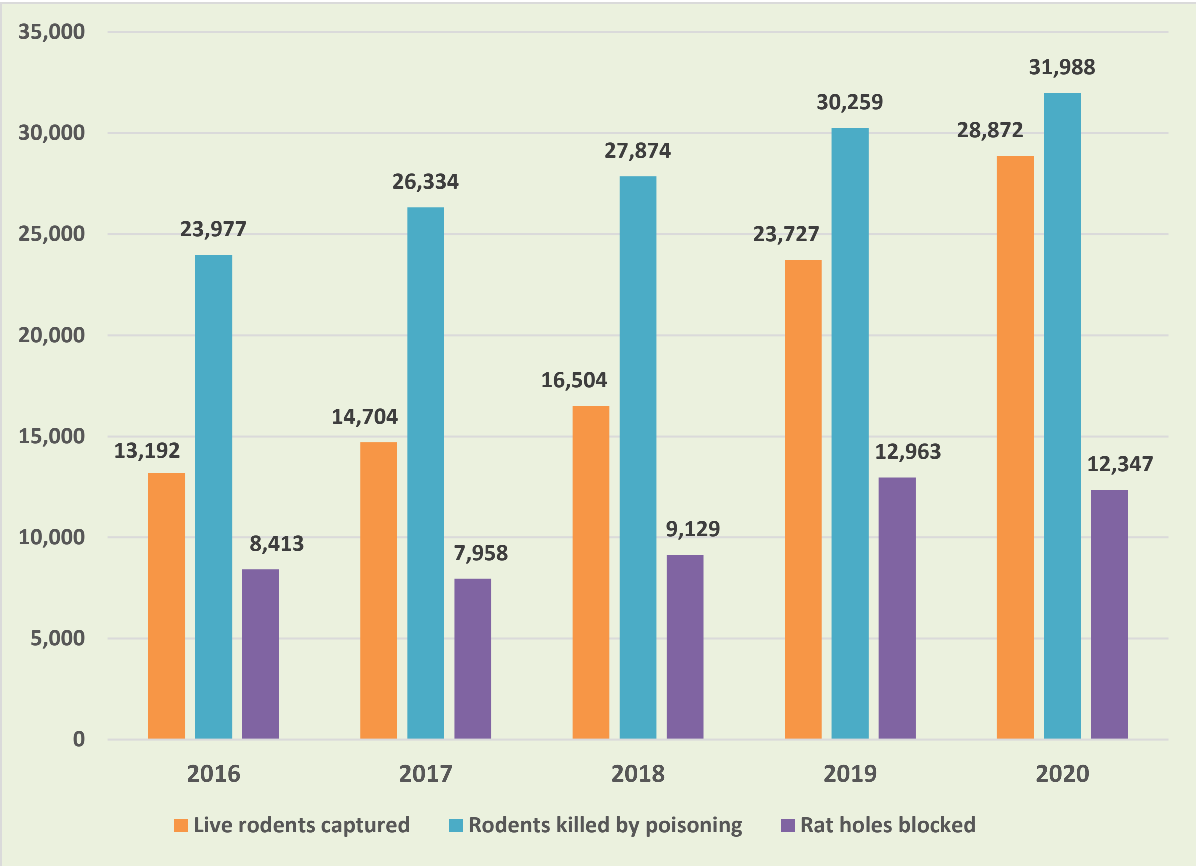


4.9 FEHD may use rodent bait boxes containing rodenticides depending on the actual environment.

4.10 Where rat holes are found, FEHD staff would use a long-handled spoon to put 50 to 100 grams of poisonous baits into each hole. As it is difficult to confirm whether rodents have consumed the baits, FEHD would arrange refilling of baits on alternative day until the fourth refilling is done on the seventh day. Afterwards, the rat holes would be checked to confirm if they are free of rodents, and they would then be blocked and sealed with concrete.

4.11 FEHD’s information revealed that the numbers of live rodents captured, rodents killed by rodenticides and rat holes blocked were on the rise from 2016 to 2020 (see **Figure 16** for details). While the number of rodents killed by poisoning increased by over 30% from 23,977 in 2016 to 31,988 in 2020, the number of live rodents captured from 13,192 to 28,872, which was more than twofold. FEHD believed that such rising trend was attributed to the strengthened anti-rodent operations. Specifically, use of rodent traps increased by about 53% from 53,477 times in 2016 to 81,830 times in 2020, and the quantity of poisonous baits used increased by approximately 77.7% from 21,505 kilograms (841,995 times) in 2016 to 38,226 kilograms (1,211,237 times) in 2020. There was also a 44% increase in terms of frequency during the same period (see **Table 4**).

Figure 16: Statistics on live rodents captured, rodents killed by rodenticides and rat holes blocked by FEHD throughout the territory between 2016 and 2020 (Source: FEHD)



4.12 Between October 2019 and November 2020, FEHD tested the new type of flavoured rodenticide, T-shape bait box and new model of break-back traps. After being tested at the laboratory and used at rear lanes in seven administrative districts, the new type of rodenticide was found to be more effective than single-dose instant rodenticides in attracting rodents. During the on-site tests in Kwun Tong, the T-shape bait box was found to be more appealing to rodents than traditional square bait box. On-site tests also proved the effectiveness of the new model of break-back traps in capturing rodents. Hence, FEHD introduced these products and devices in the routine anti-rodent operations in 2021 (see **Figures 17 to 19**). Moreover, in collaboration with the Chinese University of Hong Kong and the City University of Hong Kong, FEHD is conducting a research (see **para. 3.9**) which includes genetic tests to examine the resistance of active species of rodents in Hong Kong against various rodenticides. The research, which intends to identify the suitable rodenticides for use in Hong Kong, is now in the stage of data analysis.

Figures 17 to 19: Photographs showing the new anti-rodent products and devices recently introduced by FEHD
(Source: FEHD)

Figure 17: Photograph showing the new type of poisonous bait



Figure 18: Photograph showing the new model of break-back traps

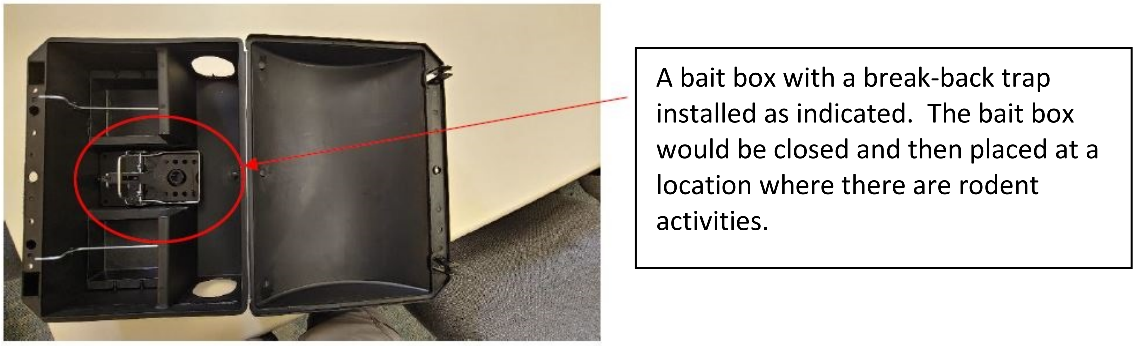
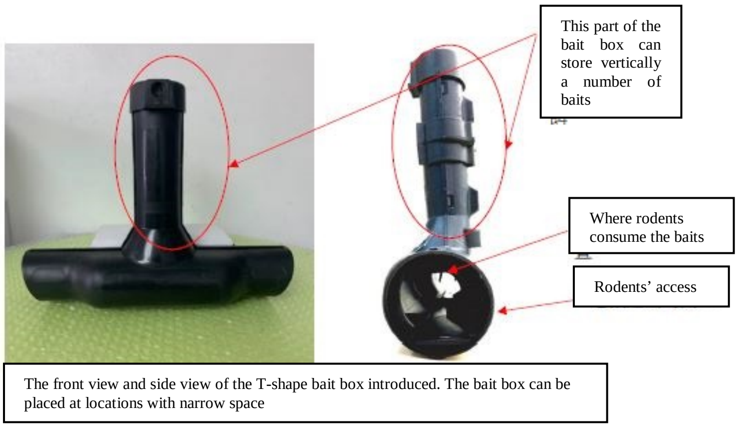


Figure 19: Photograph showing a T-shape bait box



4.13 Subject to the RIRs recorded in the survey locations, FEHD would implement preventive and control measures corresponding to each RIR level set out in the Technical Circulars. Details are listed in **Table 5** below.

Table 5: FEHD's preventive and control measures for each level of RIR

Levels of RIR	Range of RIR	Preventive and control measures to be taken
Level 1	<10%	Pest control staff of DEHOs should continue with routine rodent disinfestation to prevent the infestation problem from getting worse.
Level 2	10% to <20%	This level of rodent infestation is caused by quite a number of rodents. Hence, FEHD would take targeted operations to eliminate the whole territory of rodents so that the situation would not deteriorate. As rodent activities would be blocked by barriers such as buildings, roads and playgrounds, pest control staff of DEHO need to identify rodents' activity ranges to ensure that poisonous baits and rodent traps used are adequate for the entire infestation areas.
Level 3	20% or above	This level of RIR represents a large number of rodents within the survey locations and poor environmental hygiene. FEHD would form a working group to be chaired by the District Environmental Hygiene Superintendent to liaise with relevant Government departments and coordinate comprehensive anti-rodent operations.

4.14 Information provided by FEHD revealed that starting from mid-2020, FEHD would conduct a one-month anti-rodent operation for prevention and control at survey locations with an RIR of 8% or above, followed by another RIS to examine its effectiveness. In case the RIR still stands at a high level, the thermal camera monitoring system (see **para. 4.32**) would be deployed to identify the major activity points of rodents within the survey location to facilitate more targeted anti-rodent operations. We noticed that an RIR of 8% falls within Level 1, which means that rodent infestation is not

extensive (see **para. 3.5**), and FEHD has not included details of the aforesaid anti-rodent operations and the criteria for conducting such operations into the Technical Circulars (see **Table 5**). FEHD explained that the aforesaid operations aim to monitor more closely the effectiveness of rodent control at survey locations with a higher RIR, and such operations have no direct correlation with the anti-rodent operations actually required.

ENFORCEMENT ACTION

4.15 Pursuant to section 47 of the Public Health and Municipal Services Ordinance ("PHMSO"), FEHD may issue a statutory notice to the person-in-charge of a verminous premises requiring rectification. Moreover, FEHD may issue a Nuisance Notice to the person-in-charge against the nuisances which may be dealt with summarily in accordance with section 12 of the PHMSO, requiring improvement of the environmental hygiene. Examples of such nuisances include any accumulation or deposit which is a nuisance or injurious or dangerous to health.

4.16 During FEHD's inspections, the person-in-charge of restaurants whose food preparation or cleansing work is found to be handled at outdoor areas (such as rear lanes) may be subject to enforcement action under the Food Business Regulation. In dealing with littering and discarding of domestic refuse at public places, FEHD may issue a fixed penalty notice to offenders under the Fixed Penalty (Public Cleanliness and Obstruction) Ordinance. Moreover, pursuant to section 4(1) of the Public Cleansing and Prevention of Nuisances Regulation ("PCPNR"), FEHD may prosecute any persons who deposits litter in public places. Those who deposit litter from a vehicle may be subject to prosecution under section 9A of the PCPNR. Where FEHD finds a person placing any articles that will obstruct scavenging operations, it may prosecute that person under section 22(1)(a) of the PHMSO.

4.17 Statistics on the enforcement actions taken by FEHD against rodent infestation between 2016 and 2020 are listed in **Table 6**.

Table 6: Statistics on FEHD's enforcement actions against rodent infestation between 2016 and 2020

	2016	2017	2018	2019	2020
Verbal warning	4,701	5,359	5,057	4,507	5,119
Written warning	61	39	66	90	21
Statutory notice	17	0	44	14	1
Nuisance Notice	64	33	46	115	45
Fixed penalty notice issued against littering	34,221	39,239	43,360	41,911	41,737
Prosecution[15]	835	1,104	1,326	2,043	4,116

15 The figures of prosecution were related to offences subject to section 22(1)(a) of the PHMSO, section 13(1) of the Food Business Regulation and sections 4(1) and 9A of the PCPNR .

RODENT PREVENTION AND CONTROL AT PLACES WITH POTENTIAL RISKS OF INFESTATION

4.18 As stated in **paragraph 1.1**, FEHD is responsible for rodent prevention and disinfestation in ordinary public places. For prevention of rodent infestation in places with higher risks such as public markets managed by FEHD, rear lanes and construction sites, FEHD will adopt targeted preventive and control measures to combat rodent infestation.

Public Markets

4.19 FEHD explained that in assessing rodent infestation, the frontline staff managing public markets would consider the traces of rodent activities, number of complaints and views from members of the public and stall owners. Where rodent infestation is found, FEHD staff would carry out anti-rodent work which includes timely repairs of defective facilities, more efforts to clear refuse and food residues, use of poisonous baits and rodent traps, installation of rat guards, etc. Meanwhile, FEHD also engages the Market Management Consultative Committees and makes use of the two monthly market cleaning days to remind the tenants to keep their stalls clean at all times. Prior to the cleaning days, FEHD would request in writing that the tenants clean their stalls thoroughly and its staff would later inspect the stalls to check compliance. Non-compliance with the requirements would be deemed as violation of the tenancy conditions. A verbal warning would be given to the tenant concerned, requiring him or her to rectify the situation within four days, failing which FEHD would take further enforcement action.

4.20 In addition to routine anti-rodent work, FEHD selected 11 markets (including Tai Shing Street Market and To Kwa Wan Market) in 2019 and 2020 for a three-month pilot programme of intensive anti-rodent operations. During the operation period, FEHD's contractors thoroughly cleared the refuse and cleaned the passageways and drains in the markets every night after business hours to eliminate the food sources of rodents. Plentiful rodent traps including rat cages and break-back traps were also placed in the markets in the small hours to strengthen rodent control. Take Tai Shing Street Market as an example, compared with the same period in 2019, the number of rodents killed increased noticeably after the launch of the pilot programme (see **Table 7**). Having considered the effectiveness of the operations and the opinions of a rodent expert from the United Kingdom (see **para. 4.29**), FEHD extended the intensive anti-rodent operations to 73 of its markets with high patronage (see **Appendix 1**) in October 2020.

Table 7: Statistics on the piloted intensive anti-rodent operation conducted in Tai Shing Street Market

	Number of live rodents captured	Number of rodents killed by poisoning	Monthly total in 2020	Total number of rodents captured/killed within the same period in 2019
August 2020	25	90	**115**	**29**
September 2020	33	109	**142**	**30**
October 2020	16	92	**108**	**39**

4.21 To combat the COVID-19 pandemic, FEHD has since January 2020 stepped up the cleaning and disinfection of its public markets. In July and August 2020, over 60 public markets were closed one hour earlier for deep cleaning and disinfection (including cleansing of public passageways and drains and disinfection of communal facilities) after appearance of confirmed COVID-19 cases relating to public markets. Later in October, FEHD extended the arrangement for deep cleaning and disinfection to all the markets under its management at three-month intervals. Moreover, there were news reports with photographs showing that some market stall tenants deposited pig carcasses at passageways (see **para. 5.1**), which raised public concerns over food safety and rodent infestation. In response, FEHD conducted more surprise inspections and instituted prosecutions in six cases in 2020. Meanwhile, FEHD also organised special meetings with meat stall tenants in October 2020 to remind them to ensure food safety and environmental hygiene and to comply with the terms and conditions of their tenancies as well as the relevant legislation. In January 2022, FEHD has introduced a new licensing condition for fresh provision shop licences to strengthen its regulation on the shops' handling of meat and poultry so as to ensure food safety and improve environmental hygiene. The new licensing condition stipulates that unless prior approval for an alternative arrangement has been obtained from FEHD, all fresh/chilled/frozen meat or poultry for sale, whether pre-packaged or not, must be delivered directly to the licensed fresh provision shops and at no time be left or kept outside the shop premises pending further handling or sale. In any circumstances under the alternative arrangement, the meat or poultry pending collection must be properly kept and protected to prevent from invasion or contamination.

Rear Lanes

4.22 During our site inspections in Sham Shui Po and Yuen Long, we found that rear lanes are major targets in FEHD's anti-rodent operations (see **paras. 5.9 and 5.17**).

4.23 In dealing with irregularities involving restaurants such as preparing food, cleansing utensils and depositing and disposing of articles at rear lanes, FEHD started a five-week operation targeting rear lanes adjacent to restaurants in December 2018. During the operation, FEHD launched a publicity and educational campaign and stepped up its enforcement action against non-compliant restaurants. Subject to the seriousness

of the irregularities, FEHD issued verbal warnings, advisory letters and statutory notices to and instituted prosecutions against a number of non-compliant restaurants. Enforcement actions were also taken against non-compliant restaurants during special operations in 2019. According to FEHD's record, inspections and enforcement actions covered the interior and exterior of restaurants, and the irregularities found included improper disposal of refuse, storage of uncovered food and unclean rooms for processing food. In June 2019, FEHD required its contractors to increase their manpower to form dedicated cleansing teams for stepping up the cleaning of rear lanes and to use more frequently street washing vehicles and high-pressure hot water cleaners in washing rear lanes. As at November 2021, FEHD had 24 dedicated cleansing teams of three or five staff members to deal with rear lane washing.

4.24 FEHD's licensing conditions require licensed restaurants to have rubbish bins with lid, the capacities of which are adequate for keeping all refuse to be disposed of. Failure to do so would be deemed as non-compliance and the person-in-charge of the restaurant would be subject to a verbal or written warning from FEHD, demanding rectification. If a licence holder repeatedly violates licensing conditions within six months and still fails to rectify the situation after receiving three warning letters from FEHD, the licence of the restaurant would be cancelled. Besides, FEHD can take enforcement action (including issuance of notice for removal of refuse or cleansing of venue and instituting prosecutions) against restaurants failing to properly dispose of refuse and causing environmental hygiene nuisance. The statistics on FEHD's enforcement actions against licensed restaurants for their failure to properly dispose of refuse between 2018 and 2020 are set out in **Table 8**.

Table 8: Statistics on FEHD's enforcement actions against licensed restaurants for failure to properly dispose of refuse between 2018 and 2020

	2018	2019	2020
Verbal warning	503	473	391
Written warning	1	3	0
Notice of refuse disposal and clearance of venue	66	134	58
Fixed penalty notice issued against littering	15	30	33
Prosecution	12	23	3
Cancellation of restaurant licence	0	0	0

4.25 Commencing in August 2020, FEHD has launched anti-rodent operations targeting rear lanes with serious rodent infestation in Wan Chai, Kwun Tong, Kowloon City, Sham Shui Po and Yuen Long. FEHD staff started with publicity and education among the restaurants and fresh provision shops (including shops selling snacks, vegetables and fruits and frozen meat as well as supermarkets) adjacent to those rear lanes, reminding the operators to maintain good environmental hygiene of rear lanes and to properly deposit articles and dispose of refuse. Publicity and education were followed by FEHD's inspections and enforcement actions against non-compliant operators. Depending on the situation, FEHD also arranged cleansing of rear lanes, removed articles

illegally deposited and carried out anti-rodent work. Moreover, FEHD organised joint inspections with other relevant departments including DSD, HyD and EPD to identify suitable sand pit for rodent disinfestation. Where damaged surface of rear lanes and unauthorised connection of sewage pipes were found, FEHD would request other relevant departments to take follow-up action. This Office has examined the work records of these targeted operations and noticed that inspections and enforcement actions were mostly conducted in the day time. FEHD explained that during the operation period, its staff also inspected public places near the shops after business hours to identify any environmental nuisance caused by improper disposal of refuse and took follow-up action.

4.26 Moreover, if FEHD identified any damage of rear lanes during routine visits and inspections, it would refer the cases to HyD for follow-up. Between June 2019 and December 2021, HyD completed 289 improvement works upon referral of cases including repairs of damaged road surface and rainwater nullahs and localised re-surfacing of pavement. FEHD would keep an eye on the rear lanes in various districts and, where necessary, arrange cleaning work and make referrals to HyD for improvement works.

4.27 As a special epidemic measure for private properties without refuse collection facilities (e.g. "three-nil" buildings), FEHD has since the first quarter of 2021 provided large temporary refuse bins with lids in public places (e.g. pavements) nearby the selected properties, mainly in the evening, for disposal of domestic refuse. The refuse bins would be cleared in a timely manner. This measure aims to improve environmental hygiene and lower the risk of rodent infestation. It has been implemented in about 80 locations in 14 districts of Hong Kong, and FEHD regularly reviews the effectiveness of such measure. The locations where temporary refuse bins are provided are set out in **Appendix 2**. In addition, FEHD would strengthen the relevant public education and enforcement actions.

Construction Sites

4.28 Apart from routine inspections and rodent disinfestation in public places, FEHD also maintains close ties with bureaux/departments and provides technical support so that the latter can adopt effective anti-rodent measures within their ambit. For example, given that construction sites can be breeding grounds for rodents, FEHD established a mechanism for communication with HD and HyD in 2016, under which the latter would regularly provide information on construction sites and road works. Moreover, BD would provide quarterly selected information on large-scale and complicated projects declared under the Minor Works Control System and the buildings involved. Based on the above information, PCSs of FEHD would take enforcement actions and provide technical support to the persons-in-charge of the premises/works projects concerned on environmental hygiene and rodent prevention and control where necessary. As regards different built environments, FEHD has provided technical support to ArchSD and BD and issued guidelines on rodent control in buildings for HD, Link REIT and the building industry so that rodent prevention will be included in the design of buildings to reduce the risk of rodent infestation.

MAKING REFERENCE TO OVERSEAS EXPERIENCE AND INTRODUCING NEW TECHNOLOGIES

4.29 Apart from making reference to WHO's methods of rodent surveillance, prevention and control (see **paras. 3.1, 3.18 and 4.1**) and those of different regions such as the Centres for Disease Prevention and Control (see **para. 3.1**) of the United States, FEHD regularly attends international conferences and seminars on pest control for experience sharing and catching up with the latest development on pest control and prevention. Previously, FEHD had sought advice from an overseas rodent expert referred by WHO on rodent prevention and disinfestation. The expert's recommendations (including the use of break-back traps, use of more than one type of baits for capturing rodents and solicitation of views from market stall tenants through questionnaires to review and modify the strategies on rodent disinfestation) were incorporated in the intensive anti-rodent operations in public markets (see **para. 4.20**).

4.30 According to the Hong Kong Smart City Blueprint published by the Government, FEHD would explore the use of Internet of Things ("IoT") technologies and thermal imaging cameras in rodent control work. In this regard, FEHD has joined hands with EMSD in launching a pilot scheme to use the IoT technologies on rodent control at Tsuen Wan's Yeung Uk Road Market, in which FEHD would install wireless motion sensors at strategic locations in markets (such as pipes). The IoT system devised by EMSD would record rodent activities to help market management staff to monitor the ranges and extent of rodent activities. Motion sensors would also be installed at rodent traps and bait boxes so that remote notifications would be sent to market management staff upon capture of rodents or depletion of baits. FEHD has started installing wireless motion sensors by phase since the fourth quarter of 2021.

4.31 The thermal camera monitoring system using thermal imaging cameras operated with artificial intelligence can identify rodents in the images for analysis. FEHD had considered using thermal imaging cameras on RISs and conducted a trial run in rear lanes in Kowloon City. However, the data collected showed great discrepancies in rodent activities in different rear lanes, making it impossible to translate the data into infestation rates that could generally reflect the extent of rodent infestation on district basis. Hence, FEHD considered that the thermal camera monitoring system could not replace the existing mode of RISs, but it could be used for tracing rodent activities. Under the monitoring system, images of rodent hotspots can be produced by overlaying images of rodents taken in one location. By counting the frequency of rodent appearances in the thermal images, FEHD can understand where and when rodents frequently appear. Moreover, FEHD can use the monitoring system to identify the rodent hotspots within survey locations where the RIR remains at a high level and make plans for targeted rodent control work.

4.32 In view of the above analysis, FEHD considered that the thermal camera monitoring system could be used to assess the effectiveness of anti-rodent operations in designated target areas (see **paras. 4.38-4.39**). Hence, the system was employed to detect the frequency of rodent activities before and after anti-rodent operations in 46 selected

rear lanes within nine administrative areas among the designated target areas in the first round of FEHD's anti-rodent operations in 2020. The results revealed that the frequency of rodent appearances at 45 of those rear lanes had decreased by 2% to 98%, reflecting improvement of rodent infestation in the areas concerned. During the second round of anti-rodent operations in November 2020, FEHD installed thermal imaging cameras at all survey locations of the designated target areas. In May 2021, FEHD installed thermal imaging cameras at five selected rear lanes in the interim of FEHD's anti-rodent operations in the designated target areas to collect interim data for achieving more effective rodent surveillance. Data collected reflected that the frequency of rodent appearances in those five rear lanes was reduced by 27.1% to 63.5% before and after the operations. For rodent surveillance, FEHD installed thermal imaging cameras in all designated target areas before and during the anti-rodent operations in November 2021. FEHD will continue to enhance the application of the relevant technology to improve the effectiveness of anti-rodent operations.

4.33 For more effective rodent prevention and disinfestation, FEHD will continue to check updates on relevant products and equipment and proactively identify suitable ones and explore whether they can be introduced to Hong Kong.

HANDLING RODENT-RELATED COMPLAINTS

4.34 On receipt of a rodent-related complaint, PCS staff of DEHO will contact the complainant and investigate the matter promptly in order to identify the types of rodents involved, food sources, and to check whether the building concerned has been modified or repaired and whether there are rat holes for harbourage. PCS staff will also observe the traces of rodent activities such as faeces, gnawing marks and rodent smears to assess the extent of rodent infestation before planning for anti-rodent operations. Subject to the on-site situation, FEHD will take enforcement actions against the venue managers/persons-in-charge.

Data on Rodent-related Complaints

4.35 FEHD did not consider the figures of complaints as the only objective indicators to determine the seriousness of rodent infestation because such figures are subject to the public's awareness of and concerns about rodent infestation. In recent years, the public concerns about this problem and Government departments' increasing efforts on rodent control have stopped the rising trend in the number of rodent-related complaints between 2016 and 2018 and brought a downward trend in 2019 and 2020 (see **Table 9**). Apart from the number of rodent-related complaints, FEHD would also monitor the RIS results, seek local views and examine traces of rodent activities during inspections. The number of rodent-related complaints in individual administrative districts was subject to such factors as the geographical location, demographics and other local features of the area. Hence, FEHD would not assess rodent infestation by considering complaint figures alone. Since October 2021, FEHD has included analysis of hotspots in its Complaints Management Information System ("CMIS") to facilitate more effective deployment of

manpower and resources in anti-rodent work.

4.36 Based on the figures provided by FEHD, we selected several districts with more rodent-related complaints between 2016 and 2018, namely Sham Shui Po, Central and Western District and Kowloon City (see **Table 9**), and examined whether FEHD had compiled statistics and analysed data including the contents of and locations involved in local complaints in order to understand the public's concern. Of these several districts, FEHD only explained the situation in Sham Shui Po with more details: 30% of the complaints involved "three-nil" buildings and about 10% involved PRH, schools and private housing estates, while complaints about rodents entering premises accounted for more than 20%. As regards Central and Western District and Kowloon City, FEHD simply pointed out that the areas between Sai Ying Pun and Kennedy Town of the Central and Western District are more densely populated, hence more serious rodent infestation; and that in Kowloon City where there are many "three-nil buildings", improper refuse disposal by residents may cause poorer environmental hygiene and more cases of littering.

Table 9: Statistics on rodent-related complaints received by FEHD between 2016 and 2020

	2016	**2017**	**2018**	**2019**	**2020**
Total number of complaints	9,038	10,250	11,663	11,329	10,331
The five administrative districts with largest number of complaints (number of cases)	Sham Shui Po (996) Central and Western (881) Kowloon City (810) Mongkok (748) Eastern (650)	Sham Shui Po (1,181) Central and Western (871) Kowloon City (865) Yuen Long (795) Eastern (765)	Sham Shui Po (1,381) Kowloon City (1,128) Central and Western (992) Wan Chai (909) Yuen Long (892)	Sham Shui Po (1,200) Central and Western (1,074) Wan Chai (988) Kowloon City (952) Eastern (818)	Kowloon City (929) Yuen Long (928) Wan Chai (881) Eastern (872) Sham Shui Po (844)

TERRITORY-WIDE ANTI-RODENT CAMPAIGNS AND ANTI-RODENT OPERATIONS IN DESIGNATED TARGET AREAS

Territory-Wide Anti-Rodent Campaigns

4.37 Each year, FEHD launches a 20-week Anti-rodent Campaign in two phases with the relevant bureaux/departments including AFCD, DSD, HyD, HAD, HD, LandsD, LCSD and MD. In the Anti-rodent Campaigns in 2019 and 2020, FEHD's major targets were public markets/municipal services buildings, hawker bazaars, typhoon shelters and lanes adjacent to food premises. During the campaign period, FEHD stepped up inspections on the target areas and carried out anti-rodent work in the neighbouring public places such as vacant sites, sewage drains, planters and refuse collection points. It also took enforcement actions against irregularities such as preparing food, cleansing scullery and disposing of refuse improperly in rear lanes. Besides, FEHD enhanced the cleaning and cleansing of targeted rear lanes and organised programmes to strengthen public education (including the publicity campaign on rodent control organised jointly with District Councils and HAD's District Offices, and seminars on hygiene for building management companies, restaurant operators and market stall tenants). FEHD provided the statistics on territory-wide Anti-rodent Campaigns in 2019 and 2020 (see **Table 10**).

Table 10: Statistics on territory-wide Anti-rodent Campaigns in 2019 and 2020

	2019		2020	
	Phase 1	Phase 2	Phase 1	Phase 2
Number of inspections on targeted areas	16,327	20,372	19,027	21,747
Number of live rodents captured	3,462	4,535	4,874	4,911
Number of rodents killed by poisoning	5,525	5,536	5,887	5,717
Number of rat holes plugged	1,981	2,599	2,110	1,987
Number of warnings issued	787	649	779	635

Anti-rodent Operations in Designated Target Areas

4.38 From 2017 onwards, each phase of FEHD's territory-wide Anti-rodent Campaign would be followed by two rounds of eight-week anti-rodent operation in designated target areas to enhance the effectiveness. Based on the results of the RISs, statistics on rodent-related complaints, residents' opinions and the number of restaurants and "three-nil" buildings, DEHOs would select one to three target areas in each of the 19 administrative districts, with each target area normally covering covers no more than 10 rear lanes or streets.

4.39 The streets that FEHD included in the designated target areas in 2020 are set out in **Appendix 3**. FEHD's effort to enhance the effectiveness of territory-wide Anti-rodent Campaign are mainly in: (1) the improvement of environmental hygiene; (2) more intensive anti-rodent work in places with rodent infestation or potential risk of infestation

such as rear lanes, refuse collection points, public markets, hawker bazaars, cooked food markets and peripheral areas of construction sites; and (3) enforcement actions. During the two rounds of anti-rodent operation, FEHD captured and killed over 2,300 rodents and blocked more than 440 rat holes. On enforcement, FEHD issued more than 1,400 fixed penalty notices to and initiated more than 120 prosecutions against individuals/units for irregularities.

PROVISION OF TRAINING AND TECHNICAL SUPPORT TO OTHER DEPARTMENTS

4.40 The four departments from which we sought information in the course of investigation, namely AFCD, HAD, HD and LCSD, all agreed that their collaboration with FEHD has been effective.

4.41 The training and technical support provided by FEHD to these four departments in recent years are set out in **Table 11** below.

Table 11: FEHD's training and technical support provided to AFCD, HAD, HD and LCSD regarding rodent prevention and control

	AFCD	HAD	HD	LCSD
Types and number of venues/premises under its management	It manages over 400 venues and premises including country parks and Animal Management Centres	It manages 133 venues and premises, mainly including community centres, community halls and Home Affairs Enquiry Centres	As of 31 December 2020, it managed all 189 PRHs in Hong Kong and oversaw 48 construction sites within its ambit	1,188 cultural, recreational and sports facilities, mainly including parks and playgrounds, require rodent prevention and control
The party responsible for rodent prevention and control of the venues/premises	Depending on the types of venues and premises, rodent prevention and control will be undertaken by either FEHD staff or	HAD's cleaning service contractors undertake the work	HD's contractors undertake the work	LCSD staff at the venues and cleaning service contractors share the responsibility

	AFCD	HAD	HD	LCSD
	contractors, or by both parties			
Training provided by FEHD	In 2019 and 2020, AFCD staff and its contractors attended FEHD's talks on rodent disinfestation and seminars on pest control organised by FEHD	Between 2017 and 2020, HAD's District Offices participated in four pest control courses organised by FEHD	Since 2018, more than 800 staff from HD and its contractors have attended 15 pest control courses organised by FEHD	Since 2018, there has been an attendance of 397 LCSD staff in the pest control courses and seminars organised by FEHD
Technical support provided by FEHD	(1) Based on FEHD's recommendations and templates of contract terms and conditions, AFCD, HD and LCSD have included the clause regarding pest control in the contracts with cleaning service contractors. (2) FEHD would update the departments via PCSC on pest control tools and equipment (including new models of break-back traps and thermal imaging cameras) from time to time. Subject to operational needs, FEHD would also arrange join site inspections and make recommendations on rodent prevention and disinfestation. During a site inspection at HAD's request, FEHD advised on the suitable spots for placing rodenticides and recommended that wire nets with holes not exceeding 6 millimetres should be installed to prevent rodent access. HD acted on FEHD's advice given during joint site inspections and installed or strengthened anti-rodent equipment at suitable spots of estate buildings. For example, installation of metal-plate rat guards at the pipes of external walls and of metal proof outside the doors of refuse room and facility room at the bottom to prevent rodent access. (3) By convening a meeting of Inter-departmental Working Group, FEHD would provide updates on rodent-borne diseases and new strategies of rodent prevention and			

	AFCD	HAD	HD	LCSD
	disinfestation as well as making recommendations to the departments on preventive measures.			

PUBLIC VIEWS

4.42 We announced the launch of this direct investigation by press release in January 2021 and subsequently received 16 public views, many of which were about rodent infestation in various districts and particular venues. We have referred such views to FEHD to draw its attention to the matter and urge its follow-up action. As regards public views about FEHD's handling of rodent infestation and the tools and equipment used in rodent control, FEHD's response to some of the views has been detailed in the preceding paragraphs. Other views and FEHD's response are summarised as follows:

- FEHD should require its staff to submit a detailed timetable and a report for their visits/inspections for monitoring. The Department should also arrange rodent control courses for restaurants every month.

  FEHD's response: It has drawn up a code of practice for monitoring the work performance of PCS staff, stipulating how supervisory staff should monitor their subordinates' work and setting out the frequency of site supervision and review inspections. Besides, FEHD's licensing conditions provide that licensed food business premise operators should employ a hygiene manager/supervisor who should have completed a recognised training course on rodent control. FEHD would conduct routine inspections on food business premises and take appropriate actions including bringing a prosecution against non-compliant food business operators. During inspections, FEHD staff would educate food business operators to increase their awareness of food safety and environmental hygiene.

- The census baits used in RISs are barely touched because rodents in rear lanes could find food. Rodents do not fall for FEHD's poisonous baits and traps easily. Once a rodent is trapped or poisoned, other rodents will not stay in the same location. Nevertheless, FEHD continues to place poisonous baits and traps in the same locations. As a result, the infestation problem could not be eradicated.

  FEHD's response: apart from finding food to survive, rodents also need hard objects to grind their teeth to prevent excessive growth. Having considered uncooked sweet potato's hardness, its appeal for rodents and endurance in outdoor humid environment, FEHD concluded that it is a suitable census bait for RISs. FEHD previously invited an overseas expert

to Hong Kong for advice on rodent control (see **para. 4.29**). The expert found FEHD's existing practices of rodent control effective and compatible with those of WHO and other countries. The expert also gave technical advice, which included using more types of baits in one location to make rodent traps more appealing. FEHD accepted this advice and revised the Technical Circulars accordingly. Nevertheless, FEHD pointed out that rodents are gregarious and territorial animals, and they would not disperse when the alpha male in the territory is taken because another sturdy male would take its place. Currently, there is no scientific evidence to prove that "once a rodent is trapped or poisoned, other rodents will not stay in the same location".

- FEHD has spent several hundred million dollars on night-vision cameras and rodent traps powered by compressed gas, but they are ineffective.

  FEHD's response: FEHD spent about $820,000, not several hundred million dollars, on the purchase of night-vision cameras and rodent traps powered by compressed gas. FEHD has been checking updates of rodent control and new products, and making initial assessments of the effectiveness of relevant products by examining their design, operation and safety and referring to relevant scientific data and reception of those products in other cities. When suitable products and technologies are identified, FEHD would first arrange trial use in Hong Kong to confirm their effectiveness. After initial assessment, FEHD arranged a trial run of the rodent traps powered by compressed gas in the public markets of Sham Shui Po, Wong Tai Sin and Tsuen Wan between October 2018 and June 2019. The trial run costed $60,000. No rodents had been caught during the trial, which showed that the rodent traps were not suitable for Hong Kong. Between April and July 2019, FEHD arranged a trial run of the night-vision camera surveillance system in the public market of Kowloon City and rear lanes of Mong Kok. Results of the trial run, costing around $760,000, showed that the surveillance system could accurately identify rodents and trace their activities. Having considered the issue of privacy as well as the resources and technologies involved (including the number of cameras to be installed, suitable locations and power supply for the installations), however, FEHD finally did not introduce such devices.

4.43 Apart from the public views received, we met the representative of a rodent infestation concern group during the investigation for comments on FEHD's rodent control. Their comments/suggestions (in addition to those concerning RISs and the use of poisonous baits as mentioned above) and FEHD's response are as follows:

- Rodent prevention and disinfestation by FEHD's contractors have been ineffective. For example, the contractors would not use a bait box to carry the baits, and even if a bait box is used, the bait put inside is sealed. Besides, it is stipulated in FEHD's contracts that supervisors should have

completed prescribed courses on rodent control. However, as those courses focus on theories, they may not help the supervisors to gain sufficient practical experience.

FEHD's response: Contractors are required to punch the packets of poisonous baits. Unless special arrangements are required (such as having other animals in the vicinity of the baiting points), poisonous baits are usually not placed in bait boxes so that rodents are less likely to sense the danger. FEHD has recently started to use T-shape bait boxes (see **para. 4.12 and Figure 19**) when necessary. Moreover, apart from completion of relevant training courses, supervisors are required to have at least two years' experience in rodent control and supervision before taking up the job.

- FEHD should engage individual experts to form a panel to assess contractors' performance on regular basis. It should also from time to time arrange random checks on contractors' anti-rodent work to examine whether they grasp the procedures for rodent prevention and disinfestation. When inviting tenders for rodent control, FEHD should randomly check whether the representatives of companies fully understand the work plan in the tenders submitted.

  FEHD's response: FEHD has drawn up a code of practice for monitoring the work performance of PCS staff (see **para. 4.42**) and set up the PCAS (see **para. 1.1**) to provide professional advice on dealing with public health nuisance caused by rodents. The Department also meets relevant experts and attends international conferences (see **para. 4.29**) to share views and learn from overseas experience on rodent surveillance and control. On outsourcing anti-rodent work, FEHD has strictly followed the Government requirements and procedures for tender invitation and assessment to ensure fairness. During the tendering process, FEHD would not invite bidders to explain the contents of tenders. FEHD explained that it has a score sheet for tender assessment, items of which include the bidder's work plan devised for the service contract. Bidders should be able to provide more details of the services if they are familiar with the services required, and the work plans so devised should hence be more practicable.

5

CASE STUDIES AND SITE INSPECTIONS

OVERVIEW

5.1 Having scrutinised recent years' data on rodent infestation and statistics on rodent-related complaints in various districts, we selected three districts, namely Wan Chai, Sham Shui Po and Yuen Long, as case studies to look into FEHD's rodent prevention and control. Moreover, we have also identified Tai Shing Street Market and To Kwa Wan Market to examine FEHD's cleaning and rodent disinfestation work in public markets. These two markets were among those FEHD's public markets allegedly having serious rodent infestation where rodents got on and consumed pork and pig carcasses placed casually on the ground according to some media reports in 2020.

5.2 For better understanding of FEHD's rodent prevention and control work, our staff visited the aforesaid districts and public markets in May, July and August 2021.

SHAM SHUI PO

5.3 Sham Shui Po is a district full of groceries, vegetable and fruit stalls, restaurants and licenced cooked food stalls. Moreover, as there are many "three-nil" buildings, environmental hygiene and rodent problems can easily be developed in the district.

5.4 FEHD pointed out that rodent infestation has been more serious in the vicinity of Cheung Wah Street and Yee Kuk Street in Sham Shui Po (see **Figures 20 and 21**) because there are two public markets (Po On Road Market and Pei Ho Street Market) and a large number of restaurants, hawker stalls, fresh provision shops, vegetable and fruit stalls as well as groceries within the area. FEHD staff have found that many shop/stall operators put their commodities, articles and polyfoam boxes on pavements and roads, and some of them failed to properly dispose of refuse and food residues. Moreover, the area has long-standing problems of environmental hygiene and building structure due to the plentiful partitioned rooms and tenement buildings which are mostly "three-nil" buildings.

5.5 FEHD mainly relies on enforcement actions, cleaning and disinfestation together with public education and publicity to combat rodent problem in the aforesaid area. FEHD has stepped up inspections at different times of the day. Enforcement actions were taken against restaurants for food preparation and cleaning of utensils, and against shops for accumulation of articles and illegally refuse disposal at rear lanes. Besides, FEHD has also educated different stakeholders (including people working at food business and cooked food stalls) on ways of rodent prevention, hygiene and the importance of proper disposal of refuse and articles. On the other hand, FEHD has allocated more resources to step up cleaning of pavements, use pressure water surface cleaners more frequently for cleaning and place more poisonous baits and rodent traps at rear lanes. In combating hygiene problems and rodent infestation in the public markets under its management, FEHD maintains the daily routine of thorough cleaning, intensive cleaning and disinfection and intensive rodent disinfestation.

5.6 Statistics on FEHD's enforcement actions against rodent infestation in Sham Shui Po in 2019 and 2020 are given in **Table 12** below.

Table 12: Statistics on FEHD's enforcement actions against rodent infestation in Sham Shui Po in 2019 and 2020

	2019	2020
Verbal warning	184	99
Written warning	45	7
Statutory notice	1	0
Nuisance Notice	4	2
Fixed penalty notice issued against littering	1,997	2,120
Prosecution	176	130

5.7 In 2019, there were 3,291 rodents captured and 3,578 killed by poisoning in Sham Shui Po. The figures in 2020 were 4,173 and 3,254 respectively. The relevant figures accounted for more than 10% of the total numbers of rodents captured and killed by poisoning in Hong Kong (see **Figure 16**)[16] in both 2019 and 2020, which represented a relatively high proportion. FEHD also provided the statistics on rodent disinfestation in Sham Shui Po and the vicinity of Cheung Wah Street and of Yee Kuk Street between June and August 2020 (see **Table 13**). The number of rodents captured and killed by poisoning along Cheung Wah Street and Yee Kuk Street each accounted for more than 10% of Sham Shui Po's total number recorded in the same period (see **Item (c) of Table 13**), which showed that rodent infestation had been quite serious in these two areas. Live rodents captured in these two areas were far more than those killed by poisoning (see

[16] The percentage of live rodents captured in Sham Shui Po over the total number of rodents captured in the territory: (in 2019) (3,291/23,727) X 100% = 13.9%; (in 2020) (4,173/28,872) X 100% = 14.5%
The percentage of rodents killed by poisoning in Sham Shui Po over the total number of rodents killed by poisoning in the territory: (in 2019) (3,578/30,259) X 100% = 11.8%; (in 2020) (3,254/31,988) X 100% = 10.2%

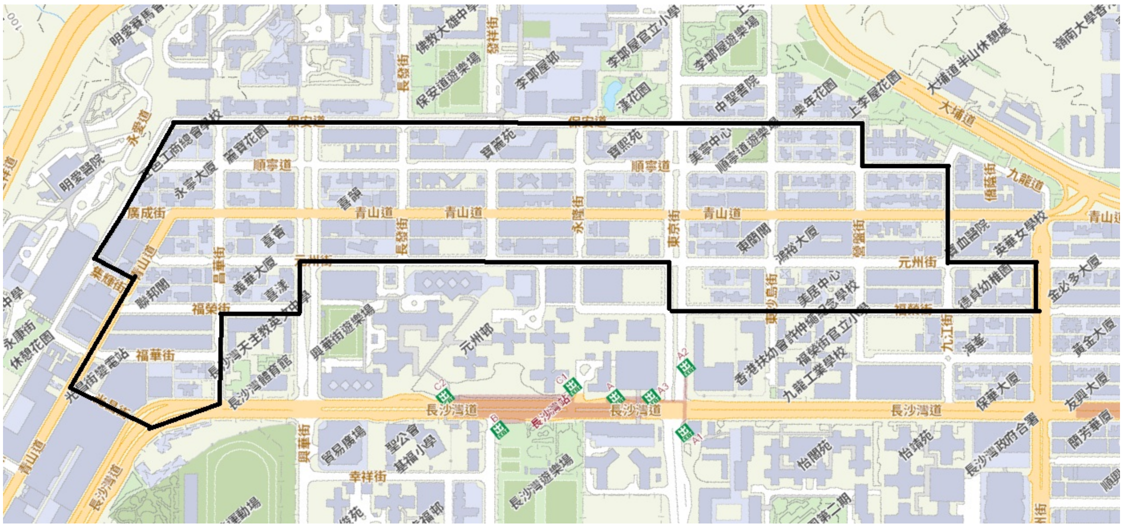
Items (a) and (b) of Table 13). The results corresponded with our observation during site inspections that FEHD had been using rodent traps more often within the areas (see **para. 5.9**).

Table 13: Statistics on FEHD's rodent disinfestation in Sham Shui Po and the vicinity of Cheung Wah Street and of Yee Kuk Street between June and August 2020

	(a) Number of live rodents captured	(b) Number of rodents killed by poisoning	(c) Total
Sham Shui Po	1,031	902	1,933
The vicinity of Cheung Wah Street (percentage of Sham Shui Po's total number recorded)	164 (15.9%)	44 (4.9%)	208 (10.8%)
The vicinity of Yee Kuk Street (percentage of Sham Shui Po's total number recorded)	244 (23.7%)	82 (9.1%)	326 (16.9%)

Figures 20 and 21: Maps showing the vicinity of Cheung Wah street and Yee Kuk Street, Sham Shui Po (Source: FEHD)

The vicinity of Cheung Wah Street (Fuk Wing Street and Po On Road, Castle Peak Road, and Wing Hong Street and Yen Chow Street)



The vicinity of Yee Kuk Street
(Yen Chow Street and Wong Chuk Street,
Cheung Sha Wan Road and Tung Chau Street, and Boundary Street)



5.8 On an evening in May 2021, we visited the vicinity of Po On Road Market and Pei Ho Street, where rodent infestation had been more serious according to FEHD (see **para. 5.4** and **Figures 20 and 21**), and found no trace of rodent activities. During the site inspection, most stalls of Po On Road Market were already closed. The floor accommodating mainly vegetable and fruit stalls and fresh meat stalls were almost all tidied up and some staff of FEHD's contractor were cleaning the place. Accumulation of refuse was, however, found at some stalls. The floor accommodating seafood stalls was in relatively poor hygiene condition with refuse, articles and seafood residues found on passageways and around drains (see **Figures 22-25**). Many stalls along the pavements near the market were found to have articles deposited and even refuse left outside the stalls during opening hours, affecting the environmental hygiene (see **Figures 26 and 27**). After the stalls had been closed, cleaning workers of FEHD's contractor cleaned the place and disposed of the refuse to improve the hygiene condition. The contractor also arranged large vehicles to collect packed refuse for disposal (see **Figures 28 and 29**).

Figures 22 to 29: Photographs taken by our staff during our site inspection at Po On Road Market and the nearby pavements in May 2021

Figures 22 to 25: Inside Po On Road Market



Figure 22



Figure 23



Figure 24



Figure 25

Figures 26 to 29: Pavements near Po On Road Market



Figure 26



Figure 27



Figure 28



Figure 29

5.9 We also noticed that FEHD's rodent disinfestation in the vicinity of Po On Road Market and Pei Ho Street focused on rear lanes, and that the Department mainly used rodent traps, supplemented by poisonous baits (see **Figures 30, 31 and 34**). A small quantity of articles was found in the rear lanes near the Market, but no article or refuse was found outside the restaurants adjoining the rear lanes. The hygiene condition was generally better (see **Figures 32 and 33**). In the rear lanes near Pei Ho street, there were, however, various articles such as trolleys, suitcases, carton boxes and polyfoam boxes. In some rear lanes, we even found outflow of sewage with offensive smell. Outside the shops nearby, a lot of articles were left on pavements after operation hours causing environmental hygiene nuisance (see **Figures 35-37**). FEHD responded that it had stepped up street cleaning and anti-rodent work in the vicinity of Po On Road Market and Pei Ho Street as well as strengthening education for nearby shop operators on environmental hygiene and reminding them not to deposit or discard articles in public places. Besides, FEHD had arranged a task force to step up enforcement actions. Records revealed that in 2021, FEHD staff issued 381 fixed penalty notices against those who violated legislation on environmental hygiene in the vicinity.

Figures 30 to 37: Photographs taken by our staff during our site inspection in the vicinity of Po On Road Market and Pei Ho Street in May 2021

Figures 30 to 33: The rear lanes near Po On Road Market

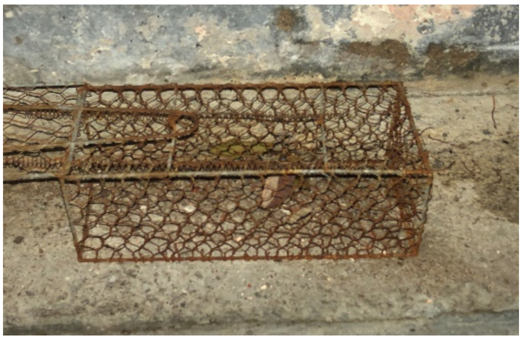




Figure 30



Figure 32

Figure 31



Figure 33

Figures 34 to 37: The rear lanes and pavements near Pei Ho Street



Figure 34



Figure 35



Figure 36

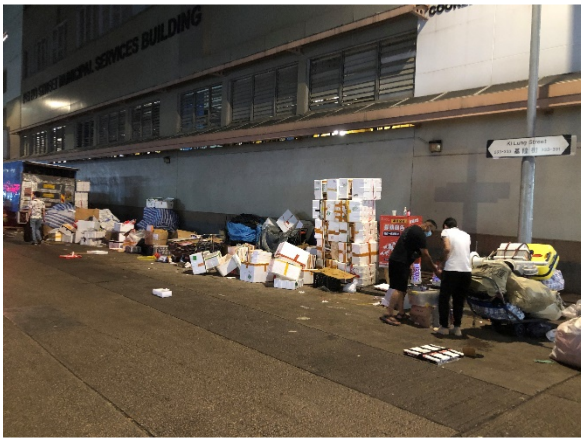


Figure 37

WAN CHAI

5.10 FEHD's information indicated that the yearly District RIRs recorded in Wan Chai between 2018 and 2020 had been rather fluctuating, surging from 2.8% in 2018 to 11.7% (Level 2) in 2019 and then falling to 1.8% in 2020. As for rodent-related complaints, Wan Chai was among the five administrative districts having the largest number between 2018 and 2020 (see **Table 9**). The number of rodent-related complaints received in Wan Chai during the period ranged from 881 to 988, and the highest was recorded in 2019. FEHD explained that rodent infestation and rodent-related complaints in Wan Chai were mainly attributed to about 530 "three-nil" buildings in the district and the adjoining rear lanes, especially in the vicinity of Hennessy Road, Lockhart Road and Jaffe Road (see **Figure 38**). To combat rodent infestation in Wan Chai, FEHD has stepped up street cleaning, rodent disinfestation and enforcement action against irregularities such as cleaning utensil and improper disposal of refuse and articles at rear lanes.

5.11 Statistics on FEHD's enforcement actions against rodent infestation in Wan Chai in 2019 and 2020 are given in **Table 14** below.

Table 14: Statistics on FEHD's enforcement actions against rodent infestation in Wan Chai in 2019 and 2020

	2019	2020
Verbal warning	61	521
Written warning	0	0
Statutory notice	0	0
Nuisance Notice	0	0
Fixed penalty notice issued against littering	1,583	1,846
Prosecution	29	24

5.12 In 2019, FEHD captured 1,213 live rodents and killed 1,533 rodents by poisoning in Wan Chai, and the figures in 2020 were 2,081 and 1,302 respectively. The relevant figures accounted for 4.1% to 7.2% of the total numbers of rodents captured and killed by poisoning in Hong Kong (see **Figure 16**)[17], which was within the normal range. Nevertheless, while the RIRs and number of rodent-related complaints in Wan Chai in 2019 were at high levels (see **para. 5.10**), the overall number of rodents disinfested was lower than that of 2020. According to FEHD's statistics on rodent disinfestation between June and August 2020, the number of rodents captured and killed by poisoning in the vicinity of Hennessy Road, Lockhart Road and Jaffe Road where rodent infestation had been more serious accounted for more than 15% of Wanchai's total number recorded in the same period (see **Item (c) of Table 15**).

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[17] The percentage of live rodents captured in Wan Chai over the total number of rodents captured in the territory: (in 2019) (1,213/23,727) X 100% = 5.1%; (in 2020) (2,081/28,872) X 100% = 7.2%
The percentage of rodents killed by poisoning in Wan Chai over the total number of rodents killed by poisoning in the territory: (in 2019) (1,533/30,259) X 100% = 5.1%; (in 2020) (1,302/31,988) X 100% = 4.1%

Table 15: Statistics on FEHD's rodent disinfestation in Wan Chai and the vicinity of Hennessy Road, Lockhart Road and Jaffe Road between June and August 2020

	(a)	(b)	(c)
	Number of live rodents captured	**Number of rodents killed by poisoning**	**Total**
Wan Chai	458	266	724
The vicinity of Hennessy Road, Lockhart Road and Jaffe Road (percentage of Wanchai's total number recorded)	62 (13.5%)	58 (21.8%)	120 (16.6%)

Figure 38: A map showing the vicinity of Hennessy Road, Lockhart Road and Jaffe Road (Source: FEHD)



5.13 Our staff visited the area near Bowrington Road Market and the vicinity of Tonnochy Road and Fleming Road (which were two areas with relatively serious rodent infestation, see **para. 5.10 and Figure 38**) on one afternoon in August 2021 while FEHD's RIS was in progress (see **para. 3.7 and Figures 2-4**). During the site inspection, we found no traces of rodent activities but we noticed that a lot of articles and objects were discarded at the rear lanes near Bowrington Road Market and the environmental hygiene was poor. The environmental hygiene of rear lanes in the vicinity of Tonnochy Road and Fleming Road was better with fewer articles found. FEHD explained that the rear lane near Bowrington Road Market was within private lots managed and used by different stakeholders. Where resources permit, FEHD would provide daily cleaning service at this rear lane to maintain public hygiene.

Figures 39 to 42: Photographs taken by our staff during our site inspection in the area near Bowrington Road Market and the vicinity of Tonnochy Road and Fleming Road in August 2021

Figures 39 to 40: the area near Bowrington Road Market





Figures 41 to 42: The vicinity of Tonnochy Road and Fleming Road





YUEN LONG

5.14 FEHD explained that there were an increasing number of fresh provision shops and vegetable shops opened in Yuen Long in recent years, together with a large number of restaurants and "three-nil" buildings, causing problems of environmental hygiene and rodent infestation as sources of complaint. Between 2018 and 2020, the Department received more than 860 rodent-related complaints on average per year, and the numbers

of complaints in 2018 and 2020 were 892 and 928 respectively, making Yuen Long one of the five administrative districts with the largest number of complaints (see **Table 9**). At the same time, the number of rodents disinfested by FEHD also increased from 2,256 in 2018 to 2,969 in 2020, which showed the increasing concern about rodent infestation among local residents and Yuen Long DEHO's stepped up rodent control.

5.15 Within the Yuen Long district, FEHD pointed out that rodent infestation has been more serious in the vicinity of Yau San Street, Mau Tan Street and Pau Cheung Square and outside Tin Shui Market (which was not managed by FEHD) (see **Figures 43 to 45**). There are many restaurants near Yau San Street, Mau Tan Street and Pau Cheung Square, and their operators and customers often dispose of refuse and food residue at rear lanes and streets. Moreover, the nearby fruit and vegetable shops deposit their merchandise and articles on pavements and fail to properly dispose of refuse, causing environmental hygiene problems and rodent infestation. As regards the cluster of snack shops outside Tin Shui Market, some people discard rubbish and food residue onto the planters or pavements. Shrubs growing in some planters cover the soil, offering shelters to rodents. This has increased the difficulty for FEHD to clear refuse, trace rodent activities and place baits at rat holes.

5.16 FEHD provided the statistics on its enforcement action (see **Table 16**) and rodent disinfestation in Yuen Long in 2019 and 2020. In 2019, the numbers of rodents captured and killed by poisoning were 1,490 and 1,554 respectively. The relevant figures in 2020 were 1,449 and 1,520, accounting for 4.8% to 6.3% of the total numbers of rodents captured and killed by poisoning in Hong Kong (see **Table 9**)[18], which were not significant percentages. Moreover, the statistics on FEHD's rodent disinfestation in areas with more serious infestation in Yuen Long (see **para. 5.15**) between June and August 2020 accounted for a small proportion of the overall number of rodents disinfested within the whole district.

5.17 Nevertheless, during our site inspection at the vicinity of Yau San Street and Mau Tan Street and of Yau San Street and Pau Cheung Square (see **Figures 43-44**), we noticed that the environmental hygiene condition of rear lanes was quite poor. Although we did not find any trace of rodent activities, and we saw FEHD's poisonous baits and rodent traps placed in the vicinity (see **Figures 46-48**), articles such as polyfoam boxes and trolleys and accumulation of refuse were found in some rear lanes (see **Figures 52 and 53**). We even found nearby restaurant staff allegedly cleaning utensils and preparing food at rear lanes (see **Figures 49-51**). FEHD indicated that it had stepped up enforcement action and arranged more frequent street cleaning and anti-rodent work in the aforesaid areas. Records revealed that in 2021, FEHD staff instituted prosecution in 12 cases against non-compliant shops and food business premises in the vicinity (one of which was against a food business for preparing food at a rear lane) as well as issuing 670 fixed penalty notices to people who committed public cleanliness offences. The

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18 The percentage of live rodents captured in Yuen Long over the total number of rodents captured in the territory: (in 2019) (1,490/23,727) X 100% = 6.3%; (in 2020) (1,449/28,872) X 100% = 5.0%
The percentage of rodents killed by poisoning in Yuen Long over the total number of rodents killed by poisoning in the territory: (in 2019) (1,554/30,259) X 100% = 5.1%; (in 2020) (1,520/31,988) X 100% = 4.8%

environmental hygiene outside Tin Shui Market was relatively satisfactory as the pedestrian flow was not large and there was no accumulation of refuse or articles (see **Figures 45, 54 and 55**).

Table 16: Statistics on FEHD's enforcement actions against rodent infestation in Yuen Long in 2019 and 2020

	2019	2020
Verbal warning	60	41
Written warning	0	0
Statutory notice	0	0
Nuisance Notice	0	0
Fixed penalty notice issued against littering	1,789	3,960
Prosecution	547	2,177

Figure 17: Statistics on FEHD's rodent disinfestation in Yuen Long, the vicinity of Yau San Street and Mau Tan Street and of Yau San Street and Pau Cheung Square between June and August 2020

	(a) Number of live rodents captured	(b) Number of rodents killed by poisoning	(c) Total
Yuen Long	341	262	603
The vicinity of Yau San Street and Mau Tan Street (percentage of Yuen Long's total number recorded)	9 (2.6%)	25 (9.5%)	34 (5.6%)
The vicinity of Yau San Street and Pau Cheung Square (percentage of Yuen Long's total number recorded)	26 (7.6%)	27 (10.3%)	53 (8.8%)

Figures 43 to 45: Maps showing the vicinity of Yau San Street and Mau Tan Street and of Yau San Street and Pau Cheung Square, and the area outside Tin Shui Market in Tin Shui Wan, Yuen Long (Source: FEHD)

The vicinity of Yau San Street and Mau Tan Street (Figure 43)



The vicinity of Yau San Street and Pau Cheung Square (Figure 44)



The area outside Tin Shui Market, Tin Shui Wan (Figure 45)



Figures 46 to 55: Photographs taken by our staff during our site inspection in the vicinity of Yau San Street and Mau Tan Street and the area outside Tin Shui Market in August 2021

Figures 46 to 53：The vicinity of Yau Sau Street and Mau Tan Street



Figure 46



Figure 47



Figure 48



Figure 49



Figure 50



Figure 51



Figure 52



Figure 53

Figures 54 and 55: the area outside Tin Shui Market



Figure 54



Figure 55

TAI SHING STREET MARKET

5.18 Due to the pandemic situation of COVID-19, FEHD has stepped up the cleaning and disinfection of public markets under its management since January 2020. We requested FEHD staff to accompany us in our site inspection at Tai Shing Street Market in July 2021.

5.19 During daytime operation hours of the Market, FEHD contractor's routine cleaning focuses on cleaning of passageways and refuse disposal. After the Market closes at 8:00 in the evening, the contractor would conduct thorough cleaning, following the steps below (see **Figures 56-61**):

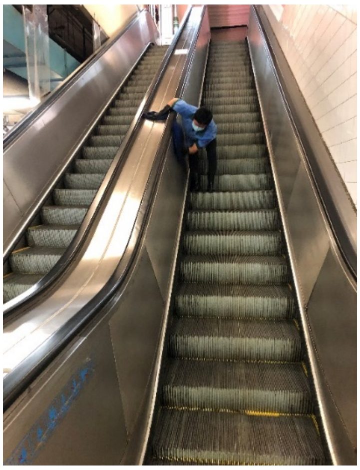
- Clear and collect refuse at public passageways and dispose of the refuse with the help of large trash bins;
- Clean the floor with water before using cleaning and disinfection agents, which include yellow powder and 1:99 diluted bleach, and large machines to clean and disinfect the floor;
- Disinfection of public facilities including stairs and escalators; and
- Clear the drain outlets to avoid blockage.

Figures 56 to 61: Photographs showing the conduct of thorough cleaning by FEHD's contractor at Tai Shing Street Market (Taken by our staff in July 2021)













5.20 Moreover, FEHD would arrange thorough cleaning and disinfection at Tai Shing Street Market every three months. The market would be closed one hour earlier so that the contractor could perform the task. Basically, the thorough cleaning and disinfection is similar to daily cleaning in terms of procedures, but diluted bleach of a higher concentration (1:49) is used to ensure better effect of disinfection.

5.21 Apart from the aforesaid arrangements for cleaning and disinfection, FEHD started a two-phase targeted intensive cleaning operation at Tai Shing Street Market in May 2020 (Phase 1 from May to June and Phase 2 from August to October 2020). During the operation, FEHD divided the two-storeyed Tai Shing Street Market into a number of zones. The contractor was required to carry out thorough cleaning and pest control in the communal areas, vacant stalls and storerooms in selected zones on prescribed dates. Tenants within the selected zones were required to clean their stalls and clear the articles within or at the upper part of the stalls to eliminate hiding places of rodents. Those stall tenants were also required to remove the merchandise displays so that the contractor could clean the drains in front of their stalls. FEHD had stepped up monitoring and taken enforcement action against violation of tenancy terms and irregularities (see **Table 18**).

Table 18: Statistics on enforcement actions taken during the targeted intensive cleaning operation at Tai Shing Street Market in 2020

	Phase 1 (From May to June 2020)	**Phase 2 (From August to October 2020)**
Number of verbal warnings issued	25	10
Number of written warnings issued	19	10
Number of prosecutions instituted	29	16

5.22 FEHD continued the targeted intensive cleaning operation at Tai Shing Street Market in 2021. Phase 1 and Phase 2 of the operation were carried out from April to June and from November to December 2021 respectively.

5.23 In August 2020, FEHD invited the Pest Control Personnel Association of Hong Kong to visit Tai Shing Street Market and give advice on anti-rodent work at the market. FEHD accepted the Association's suggestions and implemented measures, which included placing more poisonous baits and rodent traps and selecting concealed locations (such as water meter room and ventilation pipes at the ceiling) for placement of poisonous baits to enhance the effectiveness of rodent disinfestation. Currently, the packets of poisonous baits placed at Tai Shing Street Market are all punched and boxes of poisonous baits have openings at both ends for rodents' consumption of baits.

TO KWA WAN MARKET

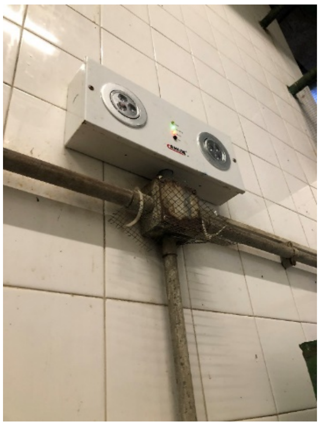
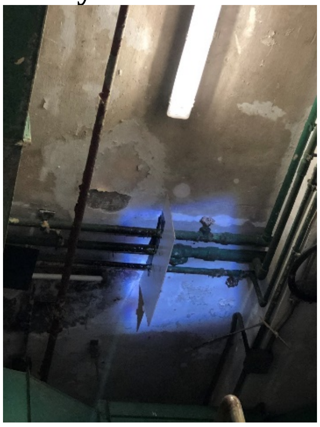
5.24 FEHD's daily routine of thorough cleaning of markets would be followed by anti-rodent work. Hence, we proceeded to observe the anti-rodent work at To Kwa Wan Market on the same day after visiting Tai Shing Street Market. Our inspection was accompanied by FEHD staff and the pest control contractor.

5.25 To Kwa Wan Market is a two-storeyed building. Its ground floor accommodates stalls selling wet commodities including poultry and vegetables as well as cooked food stalls, vacant stalls, switch room and refuse room. On the first floor of the market are meat, fish and dried food stalls with a few vacant stalls. FEHD's contractor would place rat cages or break-back traps (20 to 30 on each floor) and poisonous baits (30 to 40 packets on each floor) at fixed locations such as passageways and locations with less pedestrian flows (including vacant stalls, switch room and refuse room) (see **Figures 65-68**). In case rodent infestation (such as traces of rodent activities) is found in any stall, the contractor would immediately require the stall operator to clean the stall and place rat cages or break-back traps near the stall. For food safety, the contractor would not place poisonous baits inside the stall.

5.26 The contractor's staff work shifts. Night-shift staff are responsible for two weekly routine inspections to check the rat cages/break-back traps and poisonous baits at the fixed locations and arrange for replacement or refilling where necessary. Day-shift staff conduct daily inspections and would handle promptly rodents, if any, found in rat cages/break-back traps and request night-shift staff to place new cages/traps. They would also alert night-shift staff if refilling of poisonous baits is needed.

5.27 Apart from rodent disinfestation, the contractor would identify appropriate locations for installation of rat guards inside To Kwa Wan Market (see **Figures 62-64**) as a preventive measure.

Figures 62 to 64: Photographs showing some locations where rat guards were installed in To Kwa Wan Market (Taken by our staff in July 2021)


Figures 65 to 68: Photographs showing the anti-rodent work carried out by FEHD's contractor at To Kwa Wan Market (Taken by our staff in July 2021)

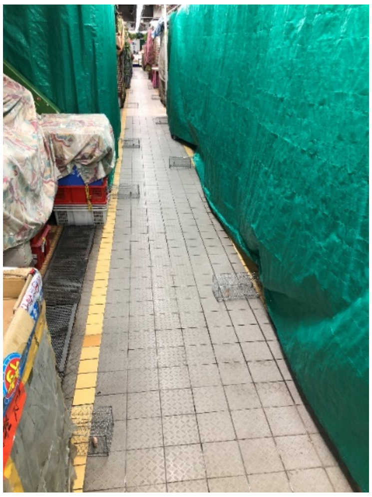





5.28 To Kwa Wan Market is one of the markets included in the pilot programme of intensive anti-rodent operations (see **para. 4.20**) and such operations are ongoing in the market. FEHD has divided the market into four zones (two zones on each floor), and each operation involves one of the zones. The contractor would place a large number of rat cages and break-back traps in the passageways, and the cages and traps would be kept appropriately apart from one another. On the following day, the contractor would collect the rat cages and break-back traps at 5:00 in the morning before the market opens, and take care of any live rodents captured or dead rodents. Each operation lasts for 21 to 30 days to ensure that rodents get familiar with the locations of census baits so that it would be easier to capture them. On the day we visited the market, the contractor was carrying out an intensive anti-rodent operation at one of the zones on the ground floor. We observed that a lot of rat cages and break-back traps were placed in the public passageways (see **Figures 69-72**).

Figures 69 to 72: Photographs showing the anti-rodent work carried out by FEHD's contractor at To Kwa Wan Market (Taken by our staff in July 2021)









5.29 FEHD has taken on board the overseas expert's recommendations for rodent disinfestation and used different types of census baits (see **para. 4.29**) including sweet potato, peanut butter, preserved Chinese sausage and roast pork in order to increase the success rate of rodent capture. During our site inspection, we observed that the contractor used sweet potato and preserved Chinese sausage as baits in the ground floor's refuse room and switch room respectively while the baits being placed in the public passageways were mainly peanut butter. We also found that FEHD's contractor had not punched the packets of poisonous baits. FEHD had followed up on this matter (see **para. 4.8**).

6

COMMENTS AND RECOMMENDATIONS

OUR COMMENTS

6.1 Rodent infestation has been an issue of wide public concern as it causes nuisances to the daily life of the general public and may spread different types of serious diseases (see **paras. 3.19-3.22**). To combat rodent infestation, the role of the public in maintaining good environmental hygiene and the Government's effort to formulate and implement effective strategies and measures are equally important. During our inspections, we found that some market stalls were in poor environmental hygiene with refuse, articles and seafood residues around sewage drains. There were accumulation of refuse or articles, or even restaurant staff allegedly cleaning utensils and preparing food in many rear lanes. Such situation is far from satisfactory. If members of the public and shop operators fail to observe the rules and leave the environmental hygiene in poor condition, however hard cleaning and pest control workers maintain cleanliness of public places and combat rodent infestation, nuisances arising from rodent infestation would persist and society as a whole would suffer the consequence. Therefore, it is incumbent upon the Government and the public to make coordinated efforts for effective rodent prevention and control.

6.2 Currently, PCSC led by FHB formulates anti-rodent policies and action plans to be implemented by FEHD and other committee members (bureaux/departments). FEHD handles rodent infestation in ordinary public places, and its duties involve three major aspects, namely rodent surveillance, rodent prevention and disinfestation, as well as handling rodent-related complaints. FEHD also provides training and technical support for other government departments regarding rodent prevention and control at public venues and premises under the latter's management to facilitate their implementation of effective rodent control measures. After examining FEHD's work, we have the following comments and recommendations.

RISs

6.3 FEHD conducts RISs in a six-month interval to assess the extensiveness of rodent infestation in the public places within each survey location (see **paras. 3.2 and 3.13**). Owing to the limitations of the surveys, the RIR shows only the percentage of rodent activity range within each survey location but not the actual number of rodents or the frequency of their appearances. Hence, even if two districts recorded the same RIRs, the actual number of rodents and the frequency of their appearances may vary. In other words, RIRs could not comprehensively reflect the actual extent of rodent infestation. We notice that there are occasional media reports about rodent infestation in various districts. We also received quite a number of public views about rodent nuisance in particular districts or venues. Despite a rising trend of the rodent-related complaints (see **Table 9**) and that of disinfestation (see **Figure 16**) from 2016 to 2020, the overall RIR recorded during the same period had been hovering at relatively low levels of below 5% (see **Figure 11 and para. 3.15**). Although some administrative districts recorded relatively higher RIR, the highest rate among them was only at Level 2 and none of them had recorded an RIR at Level 3.

6.4 FEHD explained that while the RIRs could help monitor the distribution of rodent infestation within the survey locations, there are limitations on the coverage of RISs and the RIRs could not reveal the actual number of rodents or quantify the frequency of their appearances. Hence, FEHD would consider various factors (including rodent-related complaints, observation of frontline staff and views from members of local community) in making a comprehensive assessment on rodent infestation in order to devise and adjust the strategies and measures for rodent control (see **paras. 3.13 and 3.14**). As seen from the preceding paragraph, there are limitations on the methodology of RISs, resulting in a possibility for RIR not truly reflecting the extent of rodent infestation. Although FEHD considers various factors in assessing rodent infestation, it has not incorporated those factors to formulate a "composite RIR" that can reflect the degree of rodent infestation in a more precise and representative manner.

6.5 While FEHD publishes other rodent-related data (such as the number of rodent-related complaints, rodents caught and dead rodents found) in addition to RIR where necessary, RIR is undoubtedly the most important indicator of rodent infestation for the general public. In order to reveal the actual situation of rodent infestation and enhance its credibility, we believe that RIR should be formulated in a way that can reflect the severity of rodent infestation in multiple aspects (including the distribution and number of rodents). FEHD should review the existing methodology of RISs and explore whether it can be modified to reduce the constraints of RIR. It should also examine further whether it is appropriate to incorporate factors that may help assess the extent of rodent infestation into the calculation of RIR for more comprehensive reflection of the situation. FEHD may consider engaging local universities and academic institutions to participate in researches to explore the feasibility of formulating a "composite RIR" that incorporates different factors.

6.6 Currently, six staff members of FEHD's PCAS are responsible for conducting RISs at a six-month interval in the 19 administrative districts. Such arrangement may render the aggregate RIR out-of-date because rodents have high reproduction rates and their habits change with environmental hygiene. We have suggested that FEHD explore the feasibility of assigning the conduct of RISs to PCT from the DEHO responsible for the survey locations. However, FEHD explained that having a dedicated team to conduct RISs can avoid conflict of roles arising from the overlapping responsibility for conducting surveys and anti-rodent works (see **para. 3.10**). FEHD also pointed out that if RISs are conducted by PCTs, a lot more staff would have to be engaged making monitoring more difficult. Besides, as DEHO staff are subject to regular rotations, FEHD would need to arrange frequent training to ensure that newly-posted staff can properly conduct surveys. This would in turn increase the workload of PCAS. We acknowledge FEHD's concerns. However, PCTs under DEHOs handle routine rodent prevention and disinfestation and are familiar with the condition of environmental hygiene and rodent infestation in their districts. Moreover, PCTs, having much more manpower than PCAS (**Note 1**), should be able to achieve better results in conducting RISs under proper guidance and instructions. We consider that FEHD's worries could be eased with effective measures for internal monitoring and well-defined responsibilities in place. In any event, while we do not intend to intervene in FEHD's deployment of manpower, we think that it should consider conducting RISs more frequently each year to improve the validity of survey results and exploring appropriate manpower arrangements to cope with the additional workload.

6.7 During our site inspections (see **para. 3.7**), we noticed that FEHD had failed to attach a warning notice to a census bait (see **Figures 5 and 6**) and continued to arrange disinfestation of rodents during the survey period (see **Figures 7-10**). FEHD explained that when conducting RISs, investigation staff would take pictures to record the location of each baiting point, its condition after hanging census baits and the neighbouring environmental hygiene. If the warning notice disappears or becomes defective, FEHD would arrange a replacement. In our view, FEHD should consider introducing administrative measures to ensure that its staff conduct the surveys in an appropriate manner. Such measures may include a comprehensive review of the relevant guidelines to ensure their clarity and accuracy, regular briefings and random surprise checks during survey periods.

6.8 Starting from mid-2020, FEHD has required that additional rodent disinfestation be carried out at survey locations with a "relatively high" RIR of 8% or above, followed by another survey (see **para. 4.14**). Nevertheless, it is stated in the Technical Circulars that staff only need to continue with routine rodent disinfestation for survey locations with an RIR at Level 1 (i.e. below 10%) (see **Table 5**). We have concern over FEHD's explanation that additional rodent disinfestation and RIS are only intended for closer monitoring of the effectiveness of rodent control at survey locations with a higher RIR bearing no direct correlation with the actual need for rodent disinfestation. The Technical Circulars aim primarily to set out the corresponding preventive and control measures for different levels of RIR. Any additional rodent disinfestation and survey as part of the preventive and control work should, therefore, be included in the Circulars for pest control staff's reference. Furthermore, if FEHD considers an RIR of 8% as

"relatively high" warranting additional rodent disinfestation and survey, it should review the need for adjusting the existing three-tier classification of RIR (in particular the suitability of setting Level 1 at below 10%) and the corresponding follow-up actions to ensure effective rodent control on different levels of infestation.

6.9 In response to our draft investigation report, FEHD said it had revised the Technical Circulars in August 2021 to include the additional rodent disinfestation and survey which are required for a "relatively high" RIR of 8% or above in the follow-up actions for RIR at Level 1. Such work serves as prompt and proactive rodent control when the RIR is approaching the lower limit of Level 2 (i.e. 10%), thereby preventing rodent infestation from deteriorating into Level 2 or above. Regardless of the revision to the Technical Circulars, FEHD's additional disinfestation and survey do not correspond with the follow-up actions to "continue with routine rodent disinfestation" specified for an RIR at Level 1 (see **Table 5)**. Hence, FEHD should review the need for adjusting the existing classification of RIR and the corresponding follow-up actions (see **para. 6.8**).

Rodent Prevention and Disinfestation

6.10 Trapping and poisoning with baits are two major ways adopted by FEHD for rodent control (see **para. 4.3**). Based on its knowledge of the rodent species commonly found in Hong Kong and their habits, FEHD makes its professional judgement as to which methods and tools should be used for rodent disinfestation. This Office has no intention to intervene. Nevertheless, our investigation revealed that some frontline staff of FEHD did not punch the packets of poisonous baits to let out the smell (see **Figures 12-15**). A contractor staff's allegation that rodents would tear the packing and take the poisonous baits (see **para. 4.8**) reflects apparent lack of understanding about the correct use of such baits, which directly affected their effectiveness. Since April 2020, FEHD has progressively included in new contracts with pest control contractors the requirement that packets of poisonous baits must be punched before use. Violation of such requirement will be deemed as a serious default. Moreover, FEHD has produced and uploaded to its intranet a series of videos about the skills in rodent disinfestation for its staff and contractors' reference to ensure that frontline staff's anti-rodent work meet the required technical level. The videos, which are shared to relevant government departments and organisations including HD, LCSD, Link REIT, the Pest Control Personnel Association of Hong Kong and Hong Kong Pest Management Association, demonstrate the correct use of rat cages, break-back traps and rodenticides and the ways to handle rat holes. Despite FEHD's rectification, it is difficult to tell whether the above lack of understanding is only the tip of the iceberg. In fact, failure of frontline staff to properly use disinfestation tools will undermine the effectiveness of rodent control or even render such effort fruitless. Hence, FEHD should strengthen the training for both frontline and supervisory staff. While frontline staff should be able to correctly use the tools and equipment for rodent disinfestation, supervisory staff should also acquire relevant knowledge for identification and rectification of misuse during routine inspections.

6.11 On rodent prevention, FEHD mainly relies on education, intensive cleaning and enforcement action especially for two potential hotspots of rodent activities, namely

public markets and rear lanes (see **paras. 4.18-4.27**).

6.12 Starting from 2020, FEHD has stepped up cleaning and disinfection in public markets (Note: It includes daily thorough cleaning and deep cleansing and disinfection once every three months. For details, please see **paras. 5.18-5.20**), as well as enhancing the effectiveness of rodent control by intensive anti-rodent operations. However, such measures were focused on communal areas (such as switch room and refuse room), public passageways and vacant stalls. As for the areas around rented stalls, FEHD will not use rodent disinfestation tools for the sake of food safety (see **para. 5.25**) and the stall tenants are responsible for cleaning on their own after business hours. FEHD also engages the Market Management Consultative Committees and makes use of the two monthly market cleaning days to remind the tenants to keep their stalls clean and take enforcement actions (see **para. 4.19**). It is noted that FEHD relies greatly on the stall tenants' self-discipline to maintain cleanliness, which we consider inadequate and ineffective in achieving satisfactory hygiene management. In fact, we found during our inspections at individual markets refuse accumulation outside some market stalls, and also refuse, articles and seafood residues around sewage drains outside seafood stalls after business hours (see **para. 5.8**). Such refuse and articles were most likely left behind and discarded by the stall tenants who, by doing so, had shifted their responsibilities for cleaning the stalls to FEHD's contractors.

6.13 In response to our draft investigation report, FEHD indicated its adoption of a risk-based approach by taking into account such factors as the size of the markets, number of stalls, types of goods and merchandises and previous record of hygiene condition in manpower and resource deployment for enforcement actions. In January 2021, FEHD issued instructions to its district offices requiring them to seek the assistance of the Market Management Consultative Committees to remind stall tenants to properly dispose of their refuse. FEHD also stepped up its inspections and enforcement actions, which included inspecting at least twice a day the operation and hygiene condition of each stall. Where tenants were found to have violated the tenancy terms on cleanliness and hygiene, FEHD would take follow-up actions under the established mechanism. The tenancy would be terminated if the tenant received three warning letters within six months during a tenancy period. FEHD would consider instituting prosecution pursuant to the Public Markets Regulation against tenants who fail to place a trash bin inside the stall or illegally dispose of refuse. Between January and November 2021, FEHD issued 51 verbal warnings to stall tenants for failure to maintain cleanliness inside and outside their stalls.

6.14 In our opinion, effective rodent control in public markets relies greatly on stall tenants' effort to keep clean and maintain good hygiene both inside and outside their stalls for elimination of rodents' food sources. Otherwise, rodent control would remain ineffective however hard FEHD steps up cleaning and disinfection of common areas. Although FEHD indicated that it had stepped up enforcement actions since January 2021, we still found different degrees of hygiene problems during our inspections at individual markets later in the same year. Besides, FEHD's enforcement actions were simply verbal warnings issued to stall tenants who had failed to maintain cleanliness and hygiene. The effectiveness of FEHD's monitoring is, therefore, questionable. We reckon that FEHD

should conduct intensive surprise inspections to ensure the effectiveness of its enhanced efforts on cleaning and disinfection. Where irregularities are found, FEHD should strictly enforce the tenancy terms against the stall tenant concerned and even consider invoking other applicable legislation (for example the Fixed Penalty (Public Cleanliness and Obstruction) Ordinance, see **para. 4.16)** to compel the tenant to clean the stall and neighbouring area every day. Intensive inspections will definitely require additional manpower. Hence, FEHD should actively explore how to empower the management staff of contractors to enhance the effectiveness of enforcement actions and ensure that inspections can serve their purpose. For districts with more public markets but insufficient resources, FEHD should adopt a risk-based approach to focus its inspection and enforcement on those markets in poorer hygiene condition. Besides, FEHD should continue its efforts to educate stall tenants on environmental hygiene and step up cleaning of public markets where necessary. FEHD should also consider such possible ways as establishing guidelines to set out objective standards for the cleanliness of stalls to facilitate stall tenants' understanding of its requirements and frontline staffs' inspection and monitoring.

6.15 FEHD mainly relies on frontline staff's observation and assessment (see **para. 4.19**) to determine whether there is need for stepping up cleaning and anti-rodent work for particular public markets. While management staff are more familiar with the daily operations of the public markets they are responsible for, public markets are widely distributed in the 19 administrative districts throughout Hong Kong, and the assessment criteria and weighing of each criterion may vary among staff from different districts, leading to variations in follow-up actions taken. Given the large number of markets, it may be difficult for FEHD to grasp accurately the conditions of each public market and perform overall monitoring and management without objective standards and guidelines. Hence, FEHD should consider introducing a review mechanism setting out appropriate factors for consideration and standards under a risk-based approach in order to work out systematically a list of markets requiring stepped-up cleanliness and anti-rodent control. FEHD should in parallel review the effectiveness of a targeted intensive cleaning programme (see **para. 5.21**) and the intensive anti-rodent operation being piloted (see **paras. 4.20 and 5.28**). Subject to the results and resources, FEHD should consider extending the schemes to other markets in need.

6.16 In combating rodent infestation in rear lanes, FEHD has from time to time launched thematic, special operations in recent years and strengthened enforcement action against irregularities (such as improper disposal of refuse, processing food in an unclean room and failing to cover the food stored) found in the interior and exterior of restaurants during opening hours (see **paras. 4.23-4.24**). This Office has examined the work records of the targeted operations launched since August 2020 (see **paras. 4.25**) and noticed that FEHD's inspections and enforcement actions were usually conducted in day time. We have arranged site inspections to three administrative districts, namely Sham Shui Po, Wan Chai and Yuen Long (see **Chapter 5 for details**). While acknowledging FEHD's efforts in rodent disinfestation, we still observed serious environmental hygiene problems in some rear lanes including disposal of various articles and refuse, and outflow of sewage with offensive smell. We even found restaurant staff allegedly cleaning utensils

and preparing food at rear lanes.

6.17 Tackling rodent infestation in rear lanes at the root lies not in FEHD's rodent control, but the cooperation of the public to maintain good environmental hygiene. It requires not only FEHD's effort but also self-discipline of rear lane users. Rear lanes as public places are understandably more difficult to monitor than public markets under FEHD's management. Nevertheless, we notice that the environmental hygiene problems such as accumulation of articles and refuse, cleaning of utensils and food preparation are likely related to shops adjoining rear lanes. In this regard, we consider that FEHD should first examine whether the existing mechanism for monitoring the cleanliness of shops adjoining rear lanes (especially restaurants) is effective. Where necessary, FEHD should implement enhanced measures including regularising its special operations, arranging more frequent inspections and taking more stringent enforcement actions.

6.18 Moreover, while FEHD's special operations focus on restaurants in business, there are occasional media reports about rodent activities in food shops after business hours, which are very likely attributed to the improper storage of food or handling of food residues. After all, there are plenty of food sources inside food shops; be it open or closed, they should maintain cleanliness and hygiene at all times to avoid rodent infestation. As such, we find FEHD's current practice of monitoring the operation of shops and conducting inspections only during business hours inadequate. FEHD should explore ways to handle the after-hours cleanliness problem that may arise. It is understandably difficult for FEHD to gain entry to restaurants for inspections and investigations outside their business hours. The Department may explore other feasible ways such as conducting inspections when the restaurants are preparing for business or to close, thereby ensuring good cleanliness and hygiene outside business hours. This is only one of the ways that may be explored. FEHD can further study the matter according to the actual situation.

6.19 According to FEHD, its PCAS provides professional advice on the handling of pest nuisance. Through various channels (see **para. 4.29**), FEHD also learns from the experience of overseas countries and regions on rodent surveillance and anti-rodent work. Considering that PCAS is a section within FEHD, and overseas experience might not entirely suit the needs of Hong Kong, FEHD should broaden its channels for acquiring pest control knowledge. Currently, in collaboration with two local universities, FEHD is conducting a research on local species of rodents in Hong Kong to examine their food preference and resistance to different poisonous baits (see **paras. 3.9 and 4.12**). To enhance the effectiveness of its anti-rodent work, we consider that FEHD should more proactively engage local universities and academic institutions to conduct relevant researches including the calculation of RIR (see **para. 6.5**), habits of active species of rodents in Hong Kong, as well as preventive measures and tools suitable for curbing rodent infestation.

6.20 There may be room for improvement in FEHD's rodent prevention and disinfestation, but its efforts and achievements should not be denied. In responding to our request for information, all the four selected departments namely AFCD, HAD, HD

and LCSD made positive comments on the training and technical support provided by FEHD (see **para. 4.40**). Besides, FEHD has strengthened inter-departmental coordination in launching territory-wide and district anti-rodent operations (see **paras. 4.37-4.39**) and introduced targeted rodent prevention and control measures at district level. Members of the public would be pleased to see the increase in overall rodent disinfestation in recent years (see **Figure 16**).

Use of Data on Rodent-related Complaints

6.21 Information revealed that FEHD has received an annual average of more than 10,000 rodent-related complaints in recent years (see **Figure 9**), reflecting the public's great concern on rodent infestation. Although FEHD has established a mechanism for handling rodent-related complaints (see **para. 4.34**) and it will follow up on public health risks posed by rodent-borne diseases (including rat Hepatitis E, which is yet to be categorised as a rodent-borne disease) in accordance with guidelines on rodent prevention and control (see **paras. 3.20 and 3.22**), the Department has failed to analyse the related data.

6.22 This Office has requested FEHD to provide analyses on the details of and locations involved in rodent-related complaints regarding the three administrative districts with a relatively higher number of complaints. Yet, FEHD could only give a brief account of the situation (see **para. 4.36**), and it is seemingly not well aware of the trend of complaints and the public's concern. The Department also indicated that the number of rodent-related complaints was subject to such factors as the geographical location and demographics, and therefore it would not assess rodent infestation in individual administrative districts by considering complaint figures alone (see **para. 4.35**). FEHD's explanation fails to offer any help to enhance the effectiveness of anti-rodent work.

6.23 We understand that in addition to rodent-related complaints, FEHD will consider also RIRs, local views and frontline staff's observations in assessing rodent infestation in various administrative districts and the overall situation in Hong Kong (see **para. 4.35**). The number of rodent-related complaints is no doubt an important indicator as to whether rodent infestation has generally affected the public's daily life. Meanwhile, the details of complaints can reflect which locations are hotspots of rodent activities that attract wide public concerns and carry higher risks. Hence, FEHD should allocate more resources to collate and analyse rodent-related complaints for more effective deployment of manpower and resources to venues requiring more intensive cleaning and better planning for rodent prevention and disinfestation. With the introduction of a "composite RIR" as stated in **paragraph 6.5** above, together with analyses of the details of complaints, FEHD should be able to better understand the extent of rodent infestation and adopt more targeted measures.

6.24 In response to our draft investigation report, FEHD indicated that it has since October 2021 included analysis of hotspots in its CMIS to facilitate more effective deployment of manpower and resources in anti-rodent work (see **para. 4.35**). While we

are pleased to learn that FEHD has enhanced the complaint handling capacity under CMIS, the information provided by the Department does not include details of how the new function of CMIS collates and analyses rodent-related complaints. As the new function has been introduced only recently, it may take FEHD some time to observe and review its effectiveness. Hence, we will follow up with FEHD to ensure the upgraded CMIS will achieve administrative effectiveness to our expectation and be able to address public concerns about rodent infestation.

OUR RECOMMENDATIONS

6.25 The Ombudsman has made the following recommendations to FEHD:

RISs

(1) review the existing methodology of RISs and examine whether factors which may help assess the extent of rodent infestation can be incorporated in the calculation of RIR for formulation of a "composite RIR". Where necessary, FEHD may engage local universities and academic institutions to participate in relevant researches (see **para. 6.5**);

(2) consider conducting RISs more frequently each year to improve the validity of survey results and exploring appropriate manpower arrangements to cope with the additional workload (see **para. 6.6**);

(3) introduce administrative measures, including a comprehensive review of relevant guidelines, regular briefings and random surprise checks during survey periods, to ensure that frontline staff conduct RISs in an appropriate manner (see **para. 6.7**);

(4) review the existing classification of RIR and contents of the prevailing Technical Circulars, and make appropriate adjustments and amendments as necessary (see **paras. 6.8 and 6.9**);

Rodent Prevention and Disinfestation

(5) strengthen the training for frontline and supervisory staff on the correct use of tools and equipment for rodent disinfestation (see **para. 6.10**);

(6) conduct intensive surprise inspections, strictly enforce the tenancy terms and actively explore invoking applicable legislation to step up enforcement actions to urge market stall tenants to properly clean their stalls and the surrounding areas. On manpower deployment, FEHD should explore how to empower the management staff of contractors to enhance the effectiveness of enforcement actions. For districts without

sufficient resources for intensive inspections, FEHD should adopt a risk-based approach and take targeted enforcement action at public markets in poorer hygiene condition (see **para. 6.14**);

(7) strengthen the education for market stall tenants and consider exploring such possible ways as establishing guidelines to set objective standards for the cleanliness of stalls (see **para. 6.14**);

(8) consider introducing a review mechanism setting out factors for consideration and standards under a risk-based approach in order to work out systematically a list of markets requiring stepped-up cleanliness and anti-rodent control. FEHD should in parallel review the effectiveness of the district intensive cleaning programme and the intensive anti-rodent operations being piloted. Subject to the results and resources, FEHD should consider extending the schemes to markets in need (see **para. 6.15**);

(9) examine whether the existing mechanism for monitoring the cleanliness of shops adjoining rear lanes (especially restaurants) is effective, and explore ways to handle the after-hours cleanliness problem that may arise. Where necessary, FEHD should implement enhanced measures including regularising the special operations to combat rodent infestation at rear lanes, arranging more frequent inspections and taking more stringent enforcement actions (see **paras. 6.17 and 6.18**);

(10) strengthen the cooperation with local universities and academic institutions in conducting researches to enhance the effectiveness of anti-rodent work (see **para. 6.19**). Research topics may include the calculation of RIR (see **para. 6.25(1)**), habits of active species of rodents in Hong Kong, and preventive measures and tools suitable for curbing rodent infestation; and

<u>Use of Data on Rodent-related Complaints</u>

(11) allocate more resources to collate and analyse rodent-related complaints for more effective deployment of manpower and resources to venues requiring more intensive cleaning and better planning for rodent prevention and disinfestation (see **paras. 6.23 and 6.24**).

ACKNOWLEDGEMENTS

6.26 The Ombudsman thanks FEHD, AFCD, HAD, HD and LCSD for their full cooperation during the course of this investigation, and members of the public and concern groups for their valuable opinions.

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Public markets included in the pilot programme of intensive anti-rodent operations

Hong Kong and Islands	Name of the markets	Kowloon	Name of the markets	New Territories	Name of the markets
Islands District	Cheung Chau Cooked Food Market	Mong Kok District	Fa Yuen Street Market	Tsuen Wan District	Heung Che Street Market
	Cheung Chau Market		Mong Kok Cooked Food Market		Tsuen Wan Market
	Mui Wo Cooked Food Market		Tai Kok Tsui Market		Yeung UK Road Market
	Mui Wo Market	Sham Shui Po District	Lai Wan Market	Kwai Tsing District	North Kwai Chung Market
	Peng Chau Market		Pei Ho Street Market		Tsing Yi Market
	Tai O Market		Po On Road Market	Tuen Mun District	San Hui Market
Southern District	Aberdeen Market		Tung Chau Street Temporary Market		Yan Oi Market
	Ap Lei Chau Market	Kwun Tong District	Kwun Tong Ferry Concourse Cooked Food Market	Sha Tin District	Sha Tin Market
	Nam Long Shan Road Cooked Food Market		Lei Yue Mun Market		Tai Wai Market
	Stanley Waterfront Mart		Ngau Tau Kok Market	North District	Kwu Tung Market Shopping Centre
	Tin Wan Market		Shui Wo Street Market		Luen Wo Hui Market
	Yue Kwong Road Market		Sze Shan Street Cooked Food Market		Shek Wu Hui Market
Wan Chai District	Wong Nai Chung Market		Tsun Yip Cooked Food Market		Sha Tau Kok Market
	Causeway Bay Market		Tung Yuen Street Cooked Food Market	Yuen Long District	Hung Shui Kiu Temporary Market
	Tang Lung Chau Market		Yee On Street Market		Kam Tin Market
	Lockhart Road Market	Yau Tsim District	Haiphong Road Temporary Market		Kik Yeung Road Cooked Food Market
	Bowrington Road Market		Kwun Chung Market		Kin Yip Street Cooked Food Market
	Wan Chai Market		Yau Ma Tei Market		Tai Kiu Market
Central and Western District	Centre Street Market	Kowloon City District	Hung Hom Market		Tai Tong Road Cooked Food Market
	Queen Street Cooked Food Market		Kowloon City Market		Tung Yick Market
	Sai Ying Pun Market		To Kwa Wan Market	Tai Po District	Tai Po Hui Market
	Shek Tong Tsui Market	Wong Tai Sin District	Ngau Chi Wan Market		Plover Cove Road Market
	Sheung Wan Market		Tai Shing Street Market	Sai Kung District	Sai Kung Market
	Smithfield Market				

Eastern District	Chai Wan Market
	Sai Wan Ho Market
	Yue Wan Market

Locations where refuse bins are provided in public places near "three-nil" buildings as a special anti-pandemic measure

Number	District	Address
1.	Central and Western	The rear lane adjacent to 41 D'Aguilar Street
2.		Sai Yuen Lane
3.	Wan Chai	247 Queen's Road East
4.		1-3 King Sing Street
5.		13-15 Kat On Street
6.		42 Jardine's Crescent
7.		40 Jardine's Crescent
8.	Eastern	The pavement off 82 Shau Kei Wan Main Street East
9.		The pavement at the junction of Marble Road and Kam Hong Street, North Point
10.	Southern	4-10 Tin Wan Street, Tin Wan
11.		138-144 Aberdeen Main Road, Aberdeen
12.		5-9 Wai Fung Street, Ap Lei Chau
13.	Yau Tsim	50 Battery Street
14.		13 Reclamation Street
15.		78-86 Reclamation Street
16.		88-96 Reclamation Street
17.		118-128 Shanghai Street
18.		159-165 Shanghai Street
19.		180-184 Shanghai Street
20.		19-27 Woosung Street
21.		125-135 Parkes Street
22.		422 Shanghai Street
23.		199-199A Reclamation Street
24.		16-22 Tak Cheong Lane
25.		The junction of Temple Street and Hi Lung Lane
26.		1B Wing Sing Lane
27.		The junction of Pak Hoi Street and Battery Street
28.	Mong Kok	910A Canton Road
29.		9-21 Pok Man Street
30.		The junction of Prince Edward Road West and Tung Chau Street
31.		The triangular area at the junction of Tai Nan Street and Cedar Street
32.	Sham Shui Po	256-280 and 253-293 Tai Nan Street
33.		333-337 and 356-368 Tai Nan Street
34.		344-350 and 362-368 Lai Chi Kok Road
35.		100-116 and 131-141 Ki Lung Street
36.		239-263 and 216-268 Ki Lung Street
37.		226-238, 248-262, 272-284 and 281-293 Yu Chau Street
38.		139-153, 169-193, 203-213, 235-259, 150-166, 170-174, 186-212, 218-220 236-238 and 244-258 Apliu Street
39.		157–165 Nam Cheong Street
40.		66-70, 104-130, 95, 129-131 and 136-141 Fuk Wa Street
41.		69B-79, 89-95A, 97-101, 107-109, 32-40A, 46-50, 62, 68-78, 84-86, 102-106, 110-114 and 120-128 Fuk Wing Street
42.	Kowloon City	1-3 Chung Sun Street, 2-4 Hing Yin Street
43.	Wong Tai Sin	Ngan Fung House, 16-18 Ngan Fung Street, Wong Tai Sin, Kowloon
44.	Tsuen Wan	90 Chung On Street
45.		120 Chung On Street
46.		124 Chung On Street
47.		16 Sam Pei Square
48.		70 Ho Pui Street

49.		75 Ham Tin Street
50.		5 Yi Pei Square
51.		61 Yeung Uk Road
52.		26 Tak Wah Street
53.	Tuen Mun	6 Lee Fat Path and 7 San Tsing Street
54.	Yeung Long	Ying Cheung Building, 21-23 Kau Yuk Road, Yuen Long, New Territories
55.		On Tai Building/On Hong Building, 59-71 On Hing Street, Yuen Long
56.	North	28 San Cheung Street, Sheung Shui
57.		67 San Hong Street, Sheung Shui
58.		The junction of San Hong Street and San Wing Street, Sheung Shui
59.		29 San Hong Street, Sheung Shui
60.		30 Fu Hing Street, Sheung Shui
61.		The pavement off 44 San Fat Street, Sheung Shui
62.		1-3 San Kung Street, Sheung Shui
63.		22 Tsun Fu Street, Sheung Shui
64.		17 Tsun Fu Street, Sheung Shui
65.		2 Tsun Fu Street, Sheung Shui
66.		39 Wo Tai Street, Luen Wo Hui, Fanling
67.		53 Wo Tai Street, Luen Wo Hui, Fanling
68.		20 Luen Cheong Street, Luen Wo Hui, Fanling
69.		2 Luen Fat Street, Luen Wo Hui, Fanling
70.		16 Luen Fat Street, Luen Wo Hui, Fanling
71.		17 Wo Fung Street, Luen Wo Hui, Fanling
72.	Tai Po	2 Hei Yuen Street
73.		1A, 1, 3 Shung Tak Street
74.		The side lane adjacent to 2 & 2B Nam Shing Street
75.		2 Wai Yan Street
76.		The side lane adjacent to 23 & 25 Po Yick Street
77.		4 Tung Mau Square
78.		Luk Heung Lane

Coverage of the first round of anti-rodent operation in designated target areas in 2020

District	Streets/roads covered
Central and Western	Wo On Lane, D'Aguilar Street
Eastern	Wharf Road, Tong Shui Road, Chun Yeung Street, North Point Road
Southern	Aberdeen Main Road, Yue Fai Road, Wu Pak Street, the rear lane adjacent to Tung Sing Road, Lok Yeung Street
Wan Chai	Jaffe Road, Stewart Road, Hennessy Road, Luard Road
Islands	Tai San Street, Tai San Back Street, Chung Hok Road, Tai San Praya Road, the vicinity of Cheung Chau Municipal Services Building and Cooked Food Market
Yau Tsim	Kansu Street, Battery Street, Saigon Street, Canton Road
Mong Kok	Shantung Street, Fa Yuen Street, Soy Street, Kwong Wa Street, Dundas Street, Sai Yeung Choi Street South
Sham Shui Po	Cheung Sha Wan Road, Wong Chuk Street, Apliu Street, Nam Cheong Street
	Castle Peak Road, Fuk Wing Street, Cheung Wah Street
	Castle Peak Road, Pratas Street, Un Chau Street, Tonkin Street
Kowloon City	Tak Ku Ling Road, Carpenter Road, Lung Kong Road, Nga Tsin Wai Road, Fuk Lo Tsun Road, Hau Wong Road
	Sheung Heung Road, Cheung Ning Street, Lok Shan Road, Pau Chung Street
Wong Tai Sin	Tseuk Luk Street, King Fuk Street, Choi Hung Road, Yin Hing Street
Kwun Tong	Hang On Street, Tung Ming Street, Ngau Tau Kok Road, Luen On Street
Tsuen Wan	Tsuen Wan Market Street, Chung On Street, Sha Tsui Road, Ham Tin Street, Ho Pui Street, Chuen Lung Street
Kwai Tsing	Buddhist Lam Bing Yim Memorial School, Tai Ha Street, Tai Wo Hau Road, Texaco Road
North	San Fung Avenue, Jockey Club Road, Fu Hing Street
Tai Po	Kwong Fuk Road, Po Heung Street, Wai Yi Street, On Fu Road
Sai Kung	Po Tung Road, Yi Chun Street, Yau Ma Po Street
Sha Tin	Tai Wai Village, Tsuen Nam Road, Chik Sau Lane, Chik Fuk Street, Chik Fu Street
Tuen Mun	Tsing Yin Street, Tuen Mun Road, Yan Ching Street, Tuen Mun Heung Sze Wui Road
Yuen Long	Yuen Long On Ning Road, Yuen Long Tung Tai Street, Shui Che Kwun Street, Sau Fu Street

Coverage of the second round of anti-rodent operation in designated target areas in 2020

District	Streets/roads covered
Central and Western	Des Voeux Road West, Queen's Road West
Eastern	Kam Wa Street, Mong Lung Street, Yuen Hing Lane, Shau Kei Wan Main Street East
Southern	Ka Wo Street, Shek Pai Wan Road
	Wu Nam Street, Tung Sing Road, Old Main Street Aberdeen
Wan Chai	Tsing Fung Street, King's Road, Lau Li Street, Ngan Mok Street, Lau Sin Street, Electric Road, Hing Fat Street
Islands	Peng Chau Wing On Street, Chi Yan Lane, the vicinity of Wai Tsai Street
Yau Tsim	Kimberley Road, Carnarvon Road, Granville Road, Chatham Road South, Chatham Court
Mong Kok	Chung Wui Street, Kok Cheung Street, Li Tak Street, Tai Kok Tsui Road
Sham Shui Po	Ki Lung Street, Nam Cheong Street, Lai Chi Kok Road, Shek Kip Mei Street
	Shun Ning Road, Hing Wah Street, Fuk Wing Street, Cheung Wah Street
Kowloon City	Winslow Street, Gillies Avenue South, Cooke Street, Chatham Road South
Wong Tai Sin	Yuk Wah Street, Po Fong Lane, Po Ming Lane
Kwun Tong	Lam Wah Street, Wang Kwun Road, Sheung Yuet Road, Wang Kwong Road
Tsuen Wan	Tai Chung Road, Tai Pa Street, Yuen Tun Circuit, Sha Tsui Road, Tso Kung Street, Hoi Pa Street
Kwai Tsing	Wo Tong Tsui Street, Kwai Wo Building and Cheong Fat Building, Kwong Fai Circuit
North	Luen Fat Street, Wo Tai Street, Fanling Luen On Street, Luen Wo Road
Tai Po	On Fu Road, Wai Yi Street, Po Heung Street, Wai Yan Street
Sai Kung	Yi Chun Street, Wan King Path, Sha Tsui Path
Sha Tin	Sha Tin Rural Committee Road, Yuen Wo Road, Wang Pok Street, Tai Po Road - Sha Tin
Tuen Mun	Ho Tin Street, Kin Fat Street, Pui To Road, Hung Cheung Road, Tin Hau Road, Tsun Wen Road
Yuen Long	Kau Yuk Road, Tai Tong Road, Castle Peak Road - Yuen Long, Tung Lok Street, Yuen Long On Ning Road, Sau Fu Street, Kiu Sau Path, Yuen Long Hong Lok Road